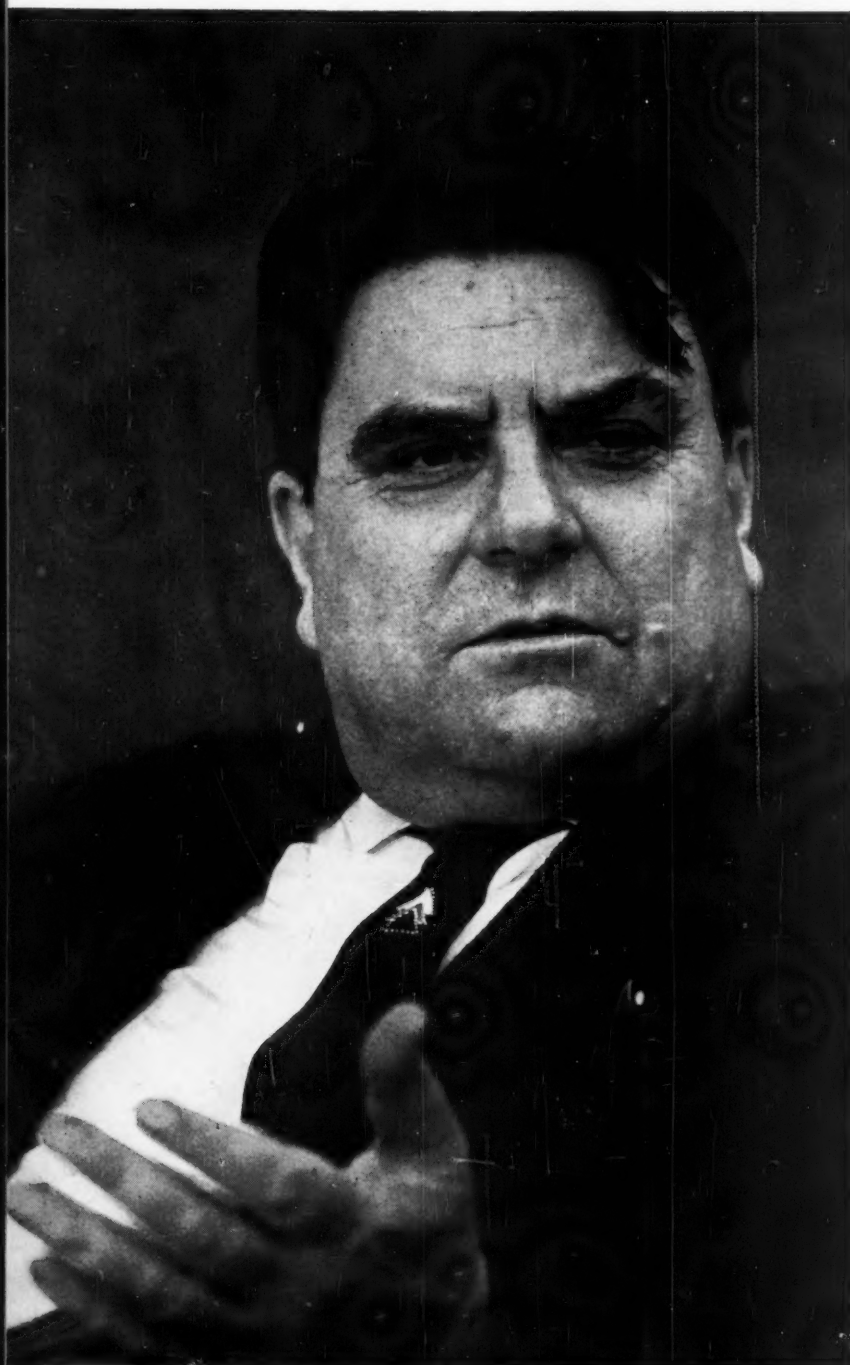


JULY 1, 1961

Chemical Week

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Phthalic anhydride
overcapacity on way.
At issue: how much,
how soon p. 16

Rush deliveries
become routine as
cost-conscious buyers
cut inventories . p. 25

Captured: beryllium.
Hard-to-handle ores
surrender to two new
processes p. 35

Methanol demand
moves ahead; but not
fast enough to
catch capacity . . p. 54

◀ ICWU'S SHAFER:
LABOR BUYS THE
SOFT SELL p. 46

STEVEN RICE
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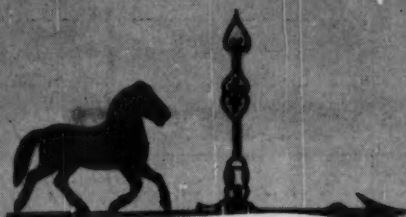
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CW 7-1-61

ON THE COVER: Marshall Shafer, secretary-treasurer of international Chemical Workers Union, explains his union's new emphasis on upgrading organizers (p. 46).



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4 CHEMICAL WEEK July 1, 1961



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Labor Omnia Vincit

The following report from Milan is by CW Editor-in-Chief Howard C. E. Johnson, on seven-nation tour of Europe's chemical industries.

Milan—A few Latin inscriptions are still to be found on the ancient gates of this city, but the Milanese are too busy building the future to dwell on glories of the past. Just as Frankfurt is the Chicago of West Germany, so is Milan the Chicago of Italy—alive to the arts and the humanities, but powered primarily by industry and commerce.

But neither Chicago nor Frankfurt can match Milan in chemical industry concentration: almost two-thirds of CHEMICAL WEEK's Italian subscribers are in Milan. This is because four major producers headquartered there—Montecatini, Edison, Snia Viscosa and the government agency, Anic—account for 70%, or more, of Italian chemical output.

The old, marble-corridorred, wood-paneled offices of Montecatini in the center of town contrast sharply with the spanking-new, airline-like offices of Anic, built just three years ago in the bustling Southeastern suburbs. But each speaks in its own way of power—power to build, power to invest, power to make Italy an ever-more potent force in the world economy.

And a potent force it is becoming. Italy's industrial economy is now growing at a 10% annual rate, its capital investment at 20%. The chemical sector is growing at a faster rate, moreover, than all manufacturing. One high company official seriously expects Italian output to double in the next five years. His own firm has investment plans totaling \$500 million.

This rapid growth is, of course, creating problems as well as opportunities. One problem is the scarcity of skilled workers. Italy's industrial North has relied in the past on French, Swiss and German workers to fill the gap; but now they are all working at home. This problem has created opportunities for the chronically unemployed, poverty-stricken, unskilled workers in the South: companies are now instituting training programs to make these unlettered peasants employable.

Italy's vision is tall enough to see beyond the Alps. It is a willing partner in the common market and hopes for (but hardly dares expect) other European nations—notably Great Britain—to join it.

Typifying this tall vision is courtly, keen Count Carlo Faina, Montecatini president. He recalls that not many years ago it was futile to talk to foreign producers. They guarded their technological secrets too zealously to enter into license agreements that would lead to disclosure of their operations. Today Montecatini licenses its basic processes to 100 licensees operating 227 plants in 26 foreign countries. The company's own first plant in the U.S.—its polypropylene plant at Neal, W. Va.—will be operating this September or October.

The world's chemical industry is becoming a reticulated network of interdependent parts. A weighty decision in Milan may affect a Frankfurt plant manager's production schedule, a Tokyo market analyst's report, a New York board of directors' capital appropriation.

Therefore we believe, not immodestly, that *CW's* role in communicating worldwide industry news is becoming more important to decision-makers in all the continents of the globe.

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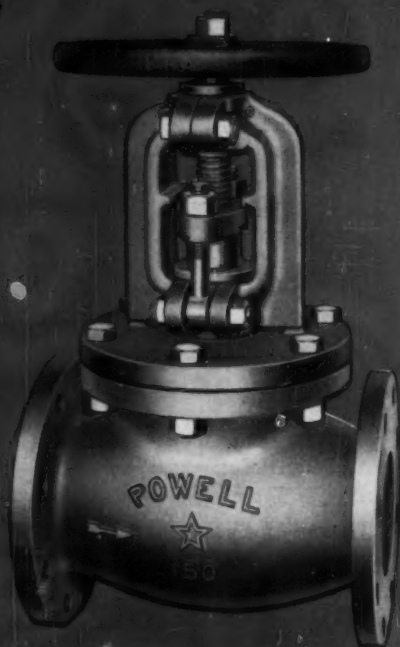
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150-pound Stainless Steel Globe Valve, Fig. 2429. Outside screw rising stem and yoke, bolted flanged bonnet, integral seat. Available only with flanged ends. Sizes, 4" through 12". Angle valves of this design can be supplied on special order.



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LETTERS

Superclays for Anticaking

TO THE EDITOR: We have read with interest your article titled "Teaching Clay New Tricks" (June 10, p. 79).

In that connection we would like to call your attention to another very interesting and commercially valuable modification of kaolin produced by United Clay Mines, Inc. (Trenton, N.J.) by incorporating our well-known water-soluble anticaking agent Petro AG Special with United's kaolin to produce superclays for anticaking of chemical powders, crystals and mixtures.

These clays are used largely in the fertilizer chemical field, and 1% of the treated clay will effectively do the work of approximately 3-4% of untreated clay.

Other new and valuable modifications of clay in combination with our organic additives are developing rapidly in the ceramic and paper fields.

F. H. GUERNSEY
Petrochemicals Co., Inc.
New York

BOCA Challenged

TO THE EDITOR: Re your Market Newsletter item "U.S. plastics industry got a benevolent knuckle-rapping" (June 17, p. 88).

I attended the SPI meeting two weeks ago and heard Paul Baseler, of the Building Officials Conference of America, make the remarks about the "consistent lack of information about plastics products." I challenged both the accuracy and fairness of this remark.

During the past five years alone, I have obtained more than 1,200 building code approvals for new plastics building products across the U.S.A. I have represented such firms as Dow Chemical Co., Monsanto Chemical Co., Koppers Co., Continental Can Co., and have always attempted to

know in advance the kind of information and laboratory tests that building code authorities would require, and have made certain that they are available before I applied for building code approval.

As proof that the U.S. plastics industry is cooperating with building officials in supplying pertinent information and proper laboratory tests, etc., I am attaching a list of 53 building code approvals (from New York to Texas) that I have obtained in the past six weeks for new plastics building products of polystyrene, polyethylene and vinyl.

Other plastics building products, for which I obtained numerous code approvals include PVC, urethane foam, glass fiber, etc.

When plastics building product manufacturers make the mistake of seeking building code approvals without the help and advice of a consultant, they certainly gamble on long delays in the marketing of the new products.

I have often helped manufacturers, after obtaining building code approvals, by introducing the new products to leading architectural and engineering offices and even seeking their specification in new structures.

JOSEPH PLATZKER
Consultant
New York

MEETINGS

Gordon Research Conferences, July 3-7; Colby Junior College, New London, N.H.—polymers; New Hampton School, New Hampton, N.H.—scientific information: problems in research; Kimball Union Academy, Meriden, N.H.—vitamins and metabolism; Tilton School, Tilton, N.H.—chemistry of carbohydrates.

Society of Chemical Industry, 80th annual meeting, Oxford, England, July 10-14.

American Oil Chemists' Society, short course on "Newer Lipid Analyses," University of Rochester, July 23-26.

University of California at Los Angeles, "Statistical Methods in Industry," annual program, UCLA campus, July 31-Aug. 11.

The Chemical Institute of Canada, 44th Canadian Chemical Conference and Exhibition, Queen Elizabeth Hotel, Montreal, Aug. 3-5.

18th International Congress of Pure and Applied Chemistry, Montreal, Can., Aug. 6-12.

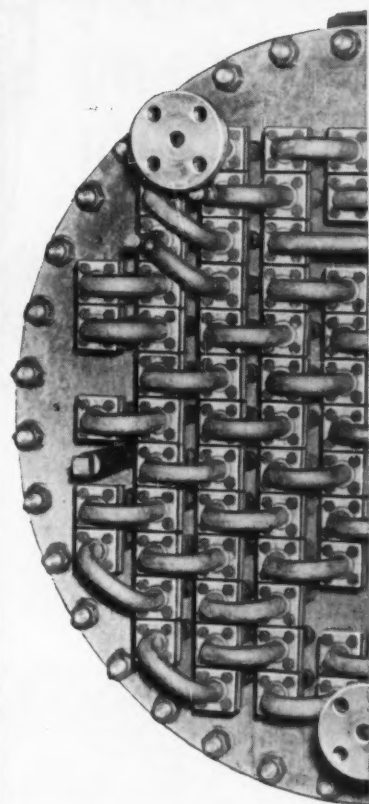
CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



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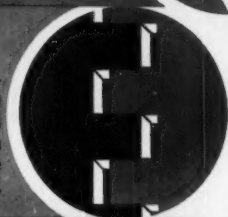
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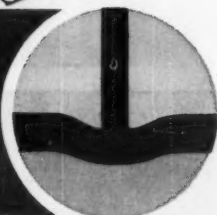
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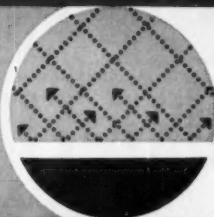
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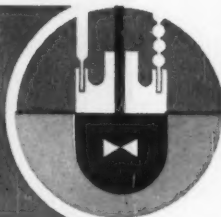
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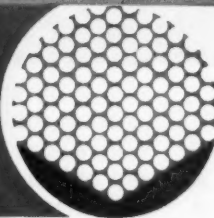
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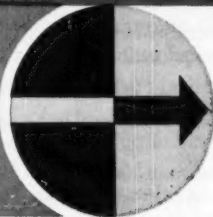
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How to buy Anhydrous Ammonia and Nitrogen Solutions

by George Day

About the Author. Twenty-four years' experience serving customers are George Day's qualifications for writing about buying and selling an industrial commodity. For the last six of his 24 selling years, George has been working with customers who buy Ammonia and Nitrogen Solutions.

* * *

In the purchase of NH_3 and Nitrogen Solutions, look for a supplier with a good reputation. This kind of supplier has built up his good name probably over many years at great expense and he has a strong desire to

see that this good name is preserved. When this is the case, it is the buyer who benefits.

Being a good supplier includes all of the routine things expected of such a source—the keeping of promises, dependable deliveries, quality that meets or exceeds specifications, etc.

However, there is much more to a good reputation. There is the matter of having the initiative to go beyond the routine, plus the willingness to do a little more than is necessary to get the business. Superior traffic know-how is among these. Being able to let a customer know

exactly when to expect delivery, and knowing intimately the routing and timing of shipments are items to look for when deciding on an Anhydrous Ammonia and Nitrogen Solutions supplier.

Perhaps I wouldn't list these suggestions for selecting a supplier if I hadn't seen from experience how much they mean to our customers.

* * *

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Remember when they fed 'em lye

In fact, the practice of feeding lye as a swine wormer may still exist in some places. But it is doubtful that lye is either an effective worm killer or worm purger, and the mortality rate is likely to be greater among the pigs than the worms! Other equally doubtful dewormers that have been tried on humans or animals are betel nut, tobacco leaves, pumpkin seeds, turpentine, even kerosene and gasoline. ¶ Since 1955, the most effective and economical anthelmintic has been piperazine. Piperazine salts are used by more than 75% of the hog raisers who practice any form of worm control, with many reporting 99% effectiveness. Jefferson, as the leading producer of piperazine, is doing much to reduce the estimated \$76 million damage caused by swine worms annually. ¶ For technical information on piperazine and Jefferson's some fifty other hardworking chemicals . . . write Jefferson Chemical Company, 1121 Walker Avenue, P. O. Box 303, Houston 1, Texas.



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JEFFERSON CHEMICALS



Business Newsletter

CHEMICAL WEEK

July 1, 1961

The USDA-Publicker surplus corn deal went through (*see p. 18*), despite strong opposition in expected quarters. For example, Enjay Chemical President J. E. Wood, III, leveled a last-minute blast at the plan (without naming names) at a week-end meeting of the American Assn. of Petroleum Landmen in Houston.

Wood pointed out that synthetic alcohol producers had spent some \$200 million in research, plant and equipment on "the proved economic premise that alcohol cannot be made economically from corn without government subsidy." He said that corn could be considered as a possible alcohol raw material "if it were priced at about 60¢/bu. or less," then noted that the government-supported price this year is \$1.20/bu.

Wood called on AAPL members to "aggressively oppose any government program for the distress sale of agricultural products for raw materials for the chemical industry."

•

New adipic acid contender. At midweek Rohm & Haas finally confirmed a long-standing trade report that it would build an adipic acid plant at Louisville, Ky., site of the former government-surplus butadiene installation the company bought early last year (*CW Business Newsletter*, Feb. 20, '60).

Official details aren't complete. But the Philadelphia firm does say that a design-and-construction contract has been signed with Scientific Design (New York); completion of the "multimillion-dollar" plant is scheduled for late summer of '62. The acid will be used for a number of Rohm & Haas' polymeric and monomeric esters (for plasticizers and synthetic lubricants).

Capacity is undisclosed, but a studied estimate of R&H's probable captive adipic requirement would indicate a plant size in the neighborhood of 20 million lbs./year.

The new Rohm & Haas project will be the first to commercially use Scientific Design's all-air-oxidation process for making adipic acid from cyclohexane.

Source of the needed cyclohexane raw material is still a closely held secret, but there are a couple of intriguing possibilities. One is the Phillips plant (Sweeny, Tex.), which reportedly is being expanded; the other, a commercial-size cyclohexane plant that might be built by Ashland Oil at Catlettsburg, Ky.

Ashland has been pilot-planting cyclohexane for some time, is said to have furnished much of the raw material for workouts of Scientific Design's patented air-oxidation route to adipic.

Business Newsletter

(Continued)

More on the Tenneco-Hydrocarbon Research deal in the big Southwest vinyl capacity race (*CW*, June 24, p. 43). Hydrocarbon will spend about \$6.5 million putting up a 730-tons/day oxygen plant to supply oxygen and high-purity nitrogen to Tenneco Chemical's new Pasadena, Tex. (near Houston), petrochemical complex.

Shawinigan Chemicals (Montreal) will switch to petroleum for part of its expanding raw-material requirements. First step: construction of a new, \$20-million petrochemical plant on the St. Lawrence, probably at Varennes, Que.

The company will initially make acetaldehyde from ethylene (supplementing its acetaldehyde-from-carbide at Shawinigan Falls, Que.) but the new project—with its supplies of propylene, butylene, butadiene and aromatic fractions—could in time become the heart of a major petrochemical complex.

U.S. chemical expansions blocked in Australia? That may be the result of a just-revealed move by London-controlled Imperial Chemical Industries of Australia and New Zealand Ltd. ICIANZ will build a \$14-million plant at Botany, a suburb of Sydney, to turn out some 63,000 long tons/year of ammonia, ammonium nitrate, methanol, nitric acid and urea. To help, the government may raise the tariff wall to prevent competition from imports.

Some U.S. companies were planning to start Australian production of some of the above products. But considering the relative smallness of the local market, these projects may have to be abandoned, or at best modified.

ICIANZ may also be planning further additions to its manufacturing program that could limit U.S. competition to less profitable projects.

Late-breaking word on chemical expansions in the South:

- Chemstrand will boost nylon yarn capacity 200% at its new (Oct. '60) Greenwood, S.C., plant, says President Edward O'Neal, Jr. Some 500 employees will be added to the plant payroll. The expansion, due in by May '62, will boost the Greenwood capacity to an estimated 30 million lbs./year.

- Farmer-owned Mississippi Chemical will double the existing 200-tons/day nitrogen fertilizer capacity at subsidiary Coastal Chemical's Gulf Coast plant at Pascagoula. Cost: \$4.5 million.

- American Cyanamid will spend \$3 million to add about 40% more anhydrous ammonia capacity and expand storage and loading facilities at its Fortier chemical complex near New Orleans, La. Target date for completion: late '62.



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ORGANICS DIVISION **Olin**

Phthalic Projects Piling Up

Status of current phthalic anhydride projects.
Capacity in million pounds/year.

Company	Capacity	Onstream Date
U.S.		
Pittsburgh Chemical Co.	10-12	Spring '61
Hatco Chemical Division, W. R. Grace & Co.	25	Summer '61
Thompson Chemical Co.	10*	Summer '61
Union Carbide Chemicals	50	Late '62
Monsanto Chemical Co.	40*	Early '62
JAPAN		
Kawasaki Chemical	24	Fall '61
Nippon Catalyst	24	Fall '61
EUROPE		
Howards of Ilford (England)	6.7	Jan. '62
St. Gobain (France)	22	Jan. '62
Synox (France)	6.6	'62
Grange Chemical (England)	35	Late '62
Cie. Francais des Matieres (France)	10.5	Early '63
Ftalital (Italy)	38	Summer '63
LATIN AMERICA		
Ind. Quimica Productos Ftalocos (Brazil)	4.4	Late '61
Probst y Cia. (Colombia)	1.5	Early '62

*CW estimate.

Phthalic: Time of Plenty

New projects firmed up last week assure that phthalic anhydride capacity will continue to mushroom both here and abroad. And the entrance of petroleum naphthalene into the marketplace, with plenty more due soon, promises to ease the feedstock shortage. But—although you can get arguments to the contrary—not everybody in the industry is ready to concede that this will inevitably add up to oversupply and overcapacity headaches—not for the next year or two, at least. Here's why:

- (1) Naphthalene is still short.
- (2) Phthalic is not easy to make; actual capacity may well run below theoretical for some time.
- (3) The upswing in the economy promises to provide enough growth in end uses to take up at least some of the slack.

Nevertheless, new projects, planned or coming onstream this year, will add at least 310 million lbs. to non-Communist world capacity (table, above);

and there is no reason to doubt that U.S. capacity will top 800 million lbs./year by the end of next year (*CW Phthalic Anhydride Report*, Dec. 10, '60, p. 85).

One reason naphthalene is still tight is that Ashland Oil's Cattlesburg, Ky., plant has gone through several shutdowns since starting up in February. Last week this unit again ran into trouble when a mechanical malfunction turned up in the reactor. Ashland reports it was a minor setback, expects to be down about 10 days. No trouble has been reported with the products or process, and Ashland hopes to hit rated capacity—perhaps as high as 100 million lbs./year—in two or three weeks.

Two other 100-million-lbs./year petroleum naphthalene plants are progressing on schedule, due onstream late this year. They are Sun Oil's plant at Toledo, O., and Tidewater-Collier's unit at Delaware City, Del.

Coke-oven naphthalene is also ex-

panding. U.S. Steel has modernized its facilities at Clairton, Pa. (figures are not available, but capacity has been upped significantly), and Bethlehem Steel plans to start producing more than 42 million lbs./year at Sparrows Point, Md., late this year.

An end to naphthalene supply problems is in sight. But many in the industry would like to have some of this feedstock right now. They see some loosening by the end of the year, but certainly no great buildup in phthalic. And even when the petroleum naphthalene does start to show up, part of it will be used to replace lower-grade materials now being used in its place.

Signs of Feast: But looking beyond the immediate picture, which is still heavily influenced by the long-standing naphthalene-phthalic famine, there are definite signs of a feast. Big new plants, like the one Union Carbide plans to have onstream late next year at Institute, W. Va. (*CW Business Newsletter*, June 17)—capacity: 50 million lbs./year—will change the outlook drastically. Add to this the growth of phthalic overseas, and it becomes obvious there will be some oversupply.

Expansion Overseas: Although it is generally felt that the overseas shortage of naphthalene will take longer to ease, many foreign countries are rapidly enlarging phthalic capacity.

In England, Grange Chemical Ltd., one-third owned by California Chemical Co., plans to build a new 33.5-million-lbs./year plant at Hull, Yorkshire. The unit, largest in the United Kingdom, will produce phthalic from o-xylene using a process licensed by California Research Corp. Onstream target: second half of '62.

Britain's phthalic capacity last year was 112 million lbs., up some 20 million from '59. It is expected that by the end of next year demand will roughly equal the new supply potential, with imports dwindling to negligible amounts. However, this assumes generally favorable business conditions. Supply now exceeds demand by about 10%, so any serious economic slump could result in excess capacity, leading to cutbacks and shutdowns.

France, in the next two years will add more than 40 million lbs./year

of phthalic capacity to its 1960 total of 68 million lbs. Biggest boost: an expansion by the country's leading producer, St. Gobain, that will up capacity 22 million lbs. by year's end.

Naphthalene was raw material for most of France's production last year, but a tight supply situation is forcing many producers to switch to *o*-xylene. This material is now imported from the U.S., but production units are going up in France, Germany and the United Kingdom, and first supplies from them are due by year's end.

Phthalic production in Italy is expanding steadily. Fitalital plans to continue its regular capacity expansions.

Germany shows a similar pattern of growth in phthalic production. This year capacity should reach 154 million lbs., but demand is also expected to rise and no oversupply problems are expected in the near future.

Japan's supply and demand are expected to continue at about the present balance. This year Japan will export some 16 million lbs. of phthalic to Australia and Europe; it will import 120 million lbs. of *o*-xylene, mostly from the U.S.

How Long? How long will the feast last? No one is sure. Optimists point to the growth in use of plasticizers, alkyd resins, and polyesters, which seems to be following population expansion. They add the healthy economic conditions abroad to the upturn in the U.S. and brush off all the added capacity as "normal" in an aggressive industry.

Pessimists feel a phthalic deluge could arrive as early as mid-'62. What with little hope to do much more exporting, the squeeze will be on, they say, especially for companies without substantial captive phthalic use. Union Carbide and W. R. Grace have moved to make their own, and others may follow. This could keep the market "sloppy," as one observer puts it, for some time—perhaps until '70.

The present phthalic price of 20¢/lb. seems headed for reduction, partly because of oversupply and partly as a result of lower naphthalene prices that will follow the opening of petroleum sources. Some think price could go as low as 15¢/lb.

Cashing In on the Upturn

Taking advantage of the business upturn and the current vigor of the money market, Dixon Chemical & Research (Clifton, N.J.) and affiliated Dixon Chemical Industries—both of which are headed by Arthur W. Dixon, Jr.—issued 6% debentures worth \$2.9 million and \$2.05 million, respectively.

Coming in Chromic: Dixon Chemical & Research expects to realize more than \$2.6 million on its new issue of 6% convertible sinking fund debentures, due '78. Proceeds are to be applied as follows:

(1) Payment of \$700,000 as part of the cost of acquiring Better Finishes & Coatings (Newark, N.J.), producer of chromic acid and industrial and corrosion-resistant maintenance coatings based on urethane, epoxy, vinyl and alkyd resins. DC&R also issued 5,882 shares of common stock to acquire this company, whose 6,250-ton/year plant is said to account for about one-third of the U.S. output of chromic.

(2) Investment of an estimated \$660,000 in construction of a 10,000-ton/year liquid sulfur dioxide plant adjacent to the company's existing 150,000-ton/year sulfuric acid and 40,000-ton/year aluminum sulfate plants at Newark, N.J. The sulfur dioxide plant is to be completed next March, and most of its output will be sold to Royce Chemical Corp. (Carlton Hill, N.J.).

(3) Investment of \$500,000 in the 6% convertible debentures issued the same day by Dixon Chemical Industries.

(4) Construction of office, machine shop and employee facilities at the Newark plants. Cost: \$100,000.

(5) Addition of the approximately \$569,000 remainder to working capital for reduction of accounts payable and for general corporate purposes.

Breakdown of Dixon Chemical & Research (including Better Finishes) '60 sales: sulfuric acid, \$2,379,000—8.5% of which were sales to Procter & Gamble; chromic acid, \$2,218,000—18% to Metal & Thermit; industrial coatings, \$1,584,000—about 20% to General Motors; resale chemicals,

\$1,273,000; alum, \$103,000. Consolidated results for the first four months of '61: sales, \$2.43 million; earnings, \$53,506.

Hydrofluoric Plans: Dixon Chemical Industries was slated to net \$1.9 to 2 million on its new issue of 6% convertible senior subordinated income debentures, due '81. About \$1.2 million will be applied to the 11,000-ton/year hydrofluoric acid project under construction adjacent to the company's 300,000-ton/year sulfuric acid plant at Paulsboro, N.J.; the remainder will go into working capital for various corporate purposes.

Total estimated cost of the HF plant and related facilities (scheduled for completion by September): \$3.95 million. Dixon says two chemical companies will buy about 30% of the plant's output.

DCI had a deficit of \$2.4 million last Dec. 31—due to losses on a fertilizer operation (since disposed of), startup costs on the sulfuric acid plant, and a skimpy sulfuric acid operating rate (less than 60% of capacity). In the first four months of '61, sales were up 12.1%, to \$863,751; and operating loss was cut 35.1%, to \$142,832.

Dixon Chemical & Research—which, on June 15, owned about 27% of DCI common stock—manages DCI.



Dixon's Dixon: Leading parallel entries into chromic and hydrofluoric.

Sticky in Molasses

Following Presidential pressure on the Dept. of Agriculture, Publicker Industries last week got a favorable surplus corn deal. Publicker will buy 14 million bu. of corn (originally valued at \$1.66/bu.) at 64¢/bu. over a 12-month period.

The pressure from President Kennedy came in response to Publicker's purchase of molasses from Cuba. This deal gave Castro U.S. dollars, thereby tending to relieve economic pressure on Cuba. Publicker has agreed not to buy from Cuba during the period of the surplus corn contract.

Last week Publicker took a shipment of 2 million gal. of Cuban blackstrap molasses at its New Orleans dock. It was part of a 120-million-gal. order. There's a good chance the \$200,000 Publicker owes for the molasses it received may never reach Castro. A Panamanian steamship line, Mayan Line S.A., is suing for the money in an effort to recover \$500,000 Cuba owes it.

To close the door on future molasses deals, Kennedy pressured Agriculture to speed the corn agreement. And not hurting Publicker is the company's cordial relationship with Rep. William J. Green, Jr. (D., Pa.), who was instrumental in winning Philadelphia for Kennedy in the Presidential election.

The Dept. of Agriculture got practically the terms it wanted. Most of the difficulty in negotiation stemmed from Publicker lawyers' attempts to keep statement of cost factors vague. Reason: to give the company room to maneuver in determining its 2% profit (anything above this must be given back to the government). Agriculture got one important concession here: Publicker may sell no more than 4,000 tons/month of corn by-products, which means it will spread 12 months of production over 18 months of sales.

Motion to Dismiss

In chancery court at Nashville, Tenn., Virginia-Carolina Chemical Corp. (Richmond, Va.) has filed its answer to a stockholder lawsuit the company calls "irresponsible and scurrilous."

V-C is asking the court to dismiss the action, in which 15 stockholders sued for annulment of certain trans-

actions relating to a \$6-million Florida phosphate rock tract. The land was purchased last year by the trustee for the retirement plan fund for V-C employees (*CW*, June 3, p. 24).

Asserting that these transactions were "completely fair, above board, and to the manifest interest of this corporation," the answer brands the lawsuit "a biased effort to reap inequitable gain for a minute percentage of stockholders."

Further, the company avers that—contrary to the complaint—all details of the land transactions were revealed fully to the stockholders.



Pfizer's McKeen: More than half of the volume now in foreign sales.

New Growth Formula

Expansion of its product line and overseas operations are the main elements in Chas. Pfizer & Co. growth plan, company President John E. McKeen told a Wall Street audience last week.

The formula is working well so far this year, McKeen indicated: first-half sales, he predicted, will be up 4%, with foreign sales now accounting for slightly more than 50% of the company's total volume. And net income for the first six months is expected to be up by 10%—partly because of \$6 million in dividends from Pfizer's overseas affiliates, which last year paid the parent company \$4.25 million in dividends.

But he added that Pfizer is faced with "continued low prices in penicillin, streptomycin and bulk vitamins,

and vigorous competition that has affected our citric acid sales."

Capital expenditures this year will be about \$20 million. These include pharmaceutical plants under construction in Venezuela, Peru and Nigeria; a fermentation plant under construction in Spain; and acquisition of one-third interest in an Italian chemical firm and full ownership of a British concern making veterinary biologicals.

New GM-Du Pont Snag

The Du Pont-General Motors anti-trust case might make still another trip to the U.S. Supreme Court. That possibility appeared this week as lawyers for the companies and the government began preparations for an autumn go-round before District Judge Walter J. LaBuy in Chicago.

When the Supreme Court last week turned down Du Pont's request for more time in which to divest itself of its 63 million shares of GM stock (*CW Business Newsletter*, June 24), the way was cleared for proceedings in Chicago to determine how the divestiture should be accomplished.

But the 10-year limit on carrying out the move is expected to make Du Pont all the more favorable to distributing the GM shares on a *pro rata* basis to Du Pont stockholders; and this would mean that Du Pont's biggest stockholder, Christiana Securities, would find its holding of GM stock increased from 535,500 shares to nearly 19 million shares.

The Justice Dept. has made clear that it doesn't want that to happen, even though Christiana would own less than 7% of GM stock, and even though Christiana itself has about 4,000 shareholders. The government figures that this would be pretty much a continuation of the present Du Pont-GM relationship, since 19 million shares would still be the largest single holding of GM stock and the government regards Christiana as being closely linked to the Du Pont company. The Justice Dept. may insist that all GM stock distributed to Christiana be sold to the public.

The district court is likely to put its seal on a divestiture plan before year-end. But if there's no agreement on the Christiana question, another appeal to the Supreme Court would probably follow fast.

India Takes Aim

Details of India's third Five-Year Plan are still trickling out, even though the program has been in effect for two months.

According to the Indian Planning Commission, sulfuric acid will be a major barometer of India's industrial activity over the next five years, with capacity slated to reach 1.5 million tons by 1966. Growth will be hinged primarily on state production of fertilizer and steel, on petroleum refining, uranium extraction, and production of organic intermediates and drugs.

Consumption is slated to rise from 360,000 tons in the 1960-'61 fiscal year to 1.3 million tons in 1965-'66. Fertilizers alone would account for 890,000 tons.

Until now, Indian sulfuric acid production has started with elemental sulfur. Now the government proposes to use by-product gases from zinc and copper smelters and pyrites from the Amjor deposits of Bihar state. The pyrite plants would go up in connection with the fertilizer plants near the steelworks of Durgapur (West Bengal) and Rourkela (Orissa).

Up for Organics: Organic chemicals are also slated for large-scale development, as a result of the growth of India's plastics, dyestuffs, and drug industries. And to help start nylon and polyester fiber production, provisional targets have been set for phthalic anhydride, 150,000 tons; phenol, 15,000 tons; and methanol, 40,000 tons.

Private enterprise has been given the go-ahead on production of plastic monomers (including styrene and vinyl chloride), butadiene, carbon black and rubber chemicals, butyl alcohol and its esters, citric and oxalic acid.

State chemical development will be concentrated at one plant. It's to be built south of Bombay in collaboration with West Germany's Farbenfabriken Bayer, will produce 40 organic chemicals totaling 25,160 tons/year. Bayer will supply intermediates to the Bombay plant from the synthetic drug plant to go up in Hyderabad (Andhra).

Despite its occupation with its third Five-Year Plan, India still has some considerable gaps to fill in its Second Plan results. Fertilizer capacity was supposed to hit 290,000 tons by '61, actually reached only 110,000. Soda ash output in the '60-'61 period was

only 145,000 tons, almost 100,000 tons short; caustic soda output, at 100,000 tons, was 35,000 tons short; while dyestuff production, at 11.5 million lbs., was 10.5 million lbs. short of the plan's goal.

Recent changes in the Indian tax structure should provide added inducement for foreign firms to help fill the country's chemical gaps. Most important: for firms formed after April 1, the supertax on dividends paid on intercorporate investments has been fixed at 20% eliminating taxation of minority interests at higher rates than majority shares.



Exchequer's Lloyd: Aiming to take the steam out of racing British economy.

Brake in Britain

British chemical management is disturbed by signs of imminent government action to correct the nation's stubborn balance of payments problem, climbing prices, and the resulting weakness of the pound.

If previous cyclical patterns are a guide, corrective action could set off a recession in some industries. Just how hard the government will clamp down this time is still an open question. Its aim will be to check home demand, but not industrial expansion.

Chancellor of the Exchequer Selwyn Lloyd is expected to lose no time in using one of his new economic regulators—an across-the-board rise in indirect taxes of up to 10%. Government spending is already being cut back, and many observers expect interest rates to be boosted.

Since current efforts at international monetary cooperation make the pound less vulnerable than in the past, most observers expect only a "touch of the brake." Even so, the prospect brings no cheer to the chemical industry. Any check to consumer buying will hurt its sales. One result of a clampdown will be intensified selling abroad.

New Rules in Mexico

The first U.S.-owned company "Mexicanized" under Mexico's new mining law has launched a \$30-million expansion program.

Under the terms of the law, which was put into effect earlier this year, all new mining companies must be at least 51%-owned by Mexican nationals, while existing companies are "encouraged" by tax rebates and other benefits, to take on majority Mexican interests.

Soon after the law came into effect, American Metal Climax sold off 51% interest in its Mexican properties to a group of Mexicans headed by Raul Bailleres, president of Moctezuma Brewery and Credito Minero y Mercantil (Mining Finance Corp.). Bailleres became Board Chairman of the new company—Metalurgica Mexicana Penoles.

Building, Buying: Near its big mines at Torreon, Coahuila, Penoles is building a 30,000-tons/year zinc refinery. And an adjacent plant will be built to make sulfuric acid from the refinery by-products. Total cost of the two plants will be \$12 million, with \$8 million to come from New York bank loans now being negotiated. Later this year, Penoles plans to build a \$2.3-million sodium sulfate plant.

Penoles is also in the process of buying two big foreign-owned Mexican mining companies, both with lead, zinc, silver and gold holdings. It intends to pay some \$5.5 million for controlling interest in The Fresnillo Co., a subsidiary of The Mexican Corp. (which, in turn, is a subsidiary of Goldfields Ltd. of London and New York); and around \$9.5 million for The San Francisco Co., which is controlled by the Union Corp. of London.

Meanwhile, other U.S. mining companies are looking for Mexican partners. American Smelting & Refining is reported to be asking Banco Nacional to take on 51% interest, representing a Mexican group.

national roundup

Rounding out the week's domestic news.

Companies

Textron Inc. (Providence, R.I.) and Spencer Kellogg and Sons (Buffalo, N.Y.) stockholders will meet July 25 and 26, respectively, to vote on proposed merger of the two companies. If the plan approved by the boards of directors is ratified by shareholders, Spencer will become an operating division of Textron; six shares of Textron stock will be issued in exchange for each seven shares of Spencer stock; and one representative of the Buffalo concern will be added to the Textron board.

Dayco Corp. (Dayton, O.) is reducing its indebtedness by applying newly obtained cash to pay off 80% of bank loans outstanding at the end of '60. The company received \$12.6 million in the sale of its tire division to Firestone Tire & Rubber Co.; expects to realize about \$1.25 million on liquidation of tire assets not included in the Firestone deal; and expects to receive an additional \$4.5 million through collection of tire business receivables.

Continental Carbon Co.—jointly owned by Continental Oil, Shamrock Oil & Gas, and Witco Chemical—has completed the transfer of its headquarters from Amarillo to Houston, Tex., started in July '60.

Vulcan Materials Co. (Birmingham, Ala.) has paid out \$2.55 million in the latest step to retire its preferred stock. The firm has purchased 16,199 shares of its 6¼% preferred stock (at \$105/share) and 8,762 shares of 5.75% preferred (at \$96.50)—which were tendered in response to the company's recent offer to buy up to 20,000 shares of the 6¼% stock and up to 10,000 shares of the 5.75% stock (*CW*, May 13, p. 30).

Expansion

Polyvinyl Resins: Shawinigan Resins Corp.—owned 50-50 by Monsanto Chemical and Shawinigan Chemicals—has earmarked \$2 million for an 18-month construction project to increase polyvinyl resin production capacity of its Indian Orchard plant near Springfield, Mass. The company also will spend \$500,000 for a new office building on a 38-acre site it owns at Chicopee Falls, near the Massachusetts Industrial Park.

Sulfate, Sulfite: Virginia Chemicals & Smelting Co. (West Norfolk, Va.) plans to invest \$625,000 to ex-

pand its capacity for hydroxylamine sulfate and sodium *m*-bisulfite; and an additional \$125,000 to expand its pilot plant and research and development facilities. The capital was raised through public sale of 50,000 shares of stock at \$15/share (*CW*, May 13, p. 27).

Resins, Plastics: Dewey and Almy Chemical Division of W. R. Grace & Co. (New York) will spend an estimated \$1 million on an addition to its plant at Owensboro, Ky., for production of specially felted fibers for use in its plastics products. The plant—which originally cost \$4 million—was opened two years ago (*CW*, June 27, '59, p. 21).

LPG: Steelman Gas Ltd. (Calgary, Alta.) is asking the Alberta Oil and Gas Conservation Board to approve its plan for a \$1.6-million unit for extracting ethane, propane and butane from natural gas pipelines converging near Edmonton, Alta. The company predicts this project "will attract petrochemical industries to the area."

foreign roundup

Rounding out the week's international news.

Chemicals, Metals/U.A.R.: During '62 the United Arab Republic's Economic Development Organization will start construction of chemical, metallurgical and mining projects that will require total investments estimated at about \$170 million. These projects include calcium carbide, ferrosilicon and ferromanganese units at Aswan (\$13 million); a plant to produce organic acids, citrates and alcohol from sugar cane molasses (\$3 million); and facilities to produce 22 tons/year of heavy water (\$8.4 million). EDO also is studying a proposal to use surplus power from Aswan Dam to produce aluminum, phosphorus and phosphoric acid.

Carbon Black/India: Four Calcutta companies, three of which list U.S. concerns as prospective collaborators, have applied for licenses from the Indian government to build carbon black plants. Kanoria General Dealers proposes to build an 8,000-tons/year plant with Phillips Petroleum, which is already involved in a similar project with Duncan Bros. B. K. Jalan wants to put up a 10,800-tons unit with Vitro Corp., while Manjushree Industries would build a 16,500-tons unit with the J. Huber Corp. as collaborator. The Davenport Co. wants to build a 7,200-tons unit. Indian carbon black demand is now about 13,000 tons/year, and Indian government sources say there is room for 10,000 tons additional capacity now, with demand slated to rise to 30,000 tons/year in the '65-'66 fiscal year (*see p. 19*).

Washington

Newsletter

CHEMICAL WEEK

July 1, 1961

Administration views on the economy are becoming rosier.

The latest prediction—and it is considered the official White House line—comes from Treasury Secretary Douglas Dillon. He says that a business boom—not just a recovery—is a definite possibility by the middle of '62, a year hence.

What's more, says Dillon, the boom does not have to be accompanied by price inflation—if industry and labor will cooperate. There is enough overcapacity in most industries, he argues, to prevent shortages that might lead to price increases. If management and labor will avoid wage increases that exceed gains in productivity, price stability can be achieved. Dillon even urges price cuts where they are warranted by increased productivity.

Dillon does not say how he thinks the chemical or any other particular industry will fare in the boom. But he does believe an over-all industrial production gain of about 8% is in sight for '62. This would mean a gross national product averaging \$555 billion next year, compared with a low annual rate of \$500 billion at the beginning of '61. If his forecast is fulfilled, Dillon says, enough extra revenue will come into the federal treasury to warrant consideration of a tax cut in fiscal '63.

Industry is making a strong push to get storable liquid propellants

accepted for use in small, mobile ICBM missiles. Aerojet-General says it has developed a method of gelling the liquids, making them safe for transporting. Before firing, the gel would be put under 500-psi. to turn the fuel back into liquid state, leaving virtually no residue. This development is different from Atlantic Research's gelling process for solid fuels (*CW Washington Newsletter*, April 29).

Aerojet is trying hard to sell the Air Force on the program. Such a fuel could be used in a mobile fleet of Minuteman-type intercontinental ballistic missiles. President Kennedy early this year indefinitely delayed the Air Force's program to put solid-fueled Minuteman missiles on railroad cars to be shunted around the country.

One reason advanced for the holdback on the mobile part of the Minuteman program is that vibration effects on the solid-fueled missiles made them vulnerable to breaks in the fuel grain. This could produce erratic firings.

Up to now, inability to transport storable liquids safely has held back their use in this area. Reason: the liquids might automatically ignite in an accident. Now, Aerojet says its new gel-process fuels will not ignite until pressurized and returned to liquid state.

A step-up in production of chemical and biological weapons is

urged by Rep. Robert L. F. Sikes (D., Fla.). He is alarmed by recent testi-

Washington Newsletter

(Continued)

mony by the Army Chemical Corps that the China-Soviet bloc is ahead of the U.S. in this area (*CW Washington Newsletter*, June 17).

Sikes says such weapons would pose a deterrent to limited war. And if they have to be used, he adds, "certainly use of incapacitating weapons would rest far more easily on the conscience of mankind than many of the alternatives." Sikes also wants the government to increase civil defense programs aimed at protecting the public against attack by chemical and biological weapons.

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State and local control of food and drug "quackery" is urged by Rep. John E. Fogarty (D., R.I.). His feeling is that the \$23.6-million budget Congress grants the Food and Drug Administration falls far short of what is needed to control an \$800-million-a-year racket. Only if states and communities help, he says, can a halt be called to "the \$500-million-a-year business in nutritional quackery . . . the arthritis and rheumatism quackery which milks the public of \$250 million a year . . . The cancer racket that takes in over \$50 million a year." Fogarty is one of the leading exponents in the House of more federal funds for medical research.

•

Chemical producers in the South have a major stake in deliberations of the President's Fair Employment Practices Commission, headed by Vice-President Lyndon B. Johnson. It will issue (July 12) strict rules governing employment and upgrading of Negroes and other members of minorities on federal contract jobs of more than \$5,000.

The Johnson commission had planned to put the regulations into effect after a single hearing about three weeks ago. But unexpectedly vigorous opposition by some federal contractors—particularly a group of business leaders from South Carolina—forced another session. This is something of a formality, however. Few, if any, of the rules will be changed. The commission is so encouraged by its success in reaching a nondiscrimination agreement with Lockheed Aircraft for the plant at Marietta, Ga., it sees no need to modify the regulations.

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Proposed minimum wages for pulp and paper companies working on federal contracts have been issued by Labor Secretary Arthur J. Goldberg. They are: Primary paper and pulp branch, \$1.75/hour; rag paper and pulp branch, \$1.54; converted sanitary paper products branch, \$1.55; and building paper and building board branch, \$1.64. The old minimum for the entire industry was \$1.115 an hour.

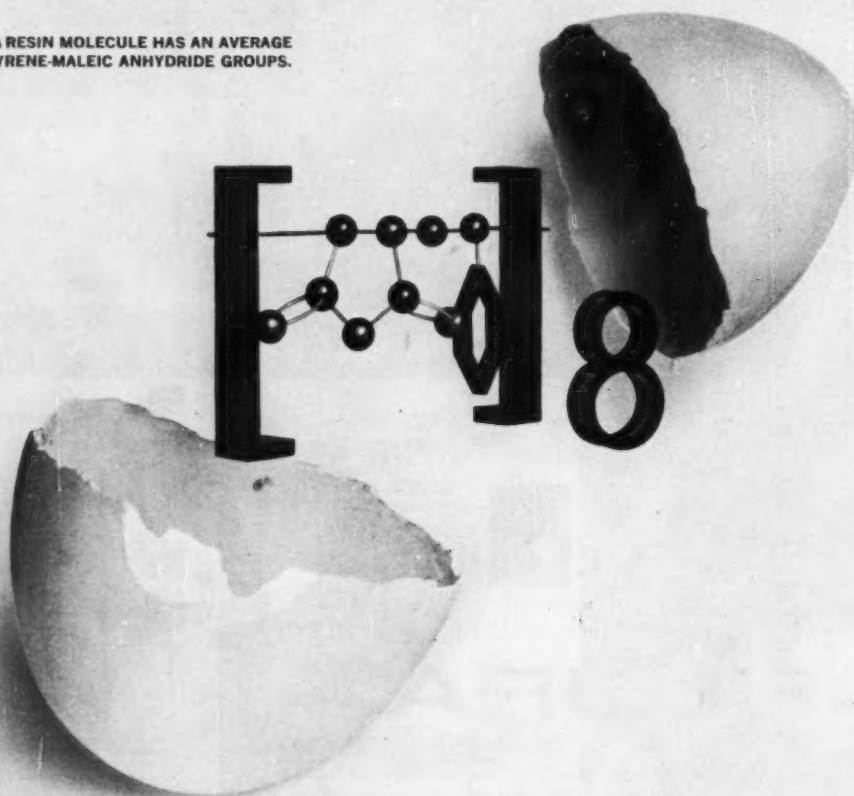
The Secretary of Labor is given authority to set such minimum wages for employees working on government supply contracts in excess of \$10,000 under terms of the Walsh-Healey Public Contracts Act. The minimum is based on what the Secretary determines to be the prevailing wage in the industry. Interested persons have until July 23 to file written protests before the decision is made final.

[illegible]

NEW SMA RESINS

TB&C has created a new series of *low molecular weight* styrene-maleic anhydride copolymers offering these extremely interesting chemical and physical properties: **Low molecular weight** (approx. 1600) makes for broad versatility of end-use applications. **Polyanhydride structure** permits infinite variety of chemical derivatives—easily reacted with ammonia and alcohols and crosslinked with glycols. **Alkali solubility** allows high solids solutions (up to 50%) at workable viscosities (5000 cps). **Surface active properties**—function as wetting agents and protective colloids, yet act as film formers in coatings applications. SMA resins have shown promise as modifiers of commercially available latexes in paints; as suspending agents in emulsion polymerization; as pigment dispersants; as alkali soluble components in emulsion floor polishes; as shellac replacements; in water soluble surface coatings, adhesives, paper coatings, textile sizes and aerosol hair sprays. Samples and complete data on SMA resins available on letterhead request.

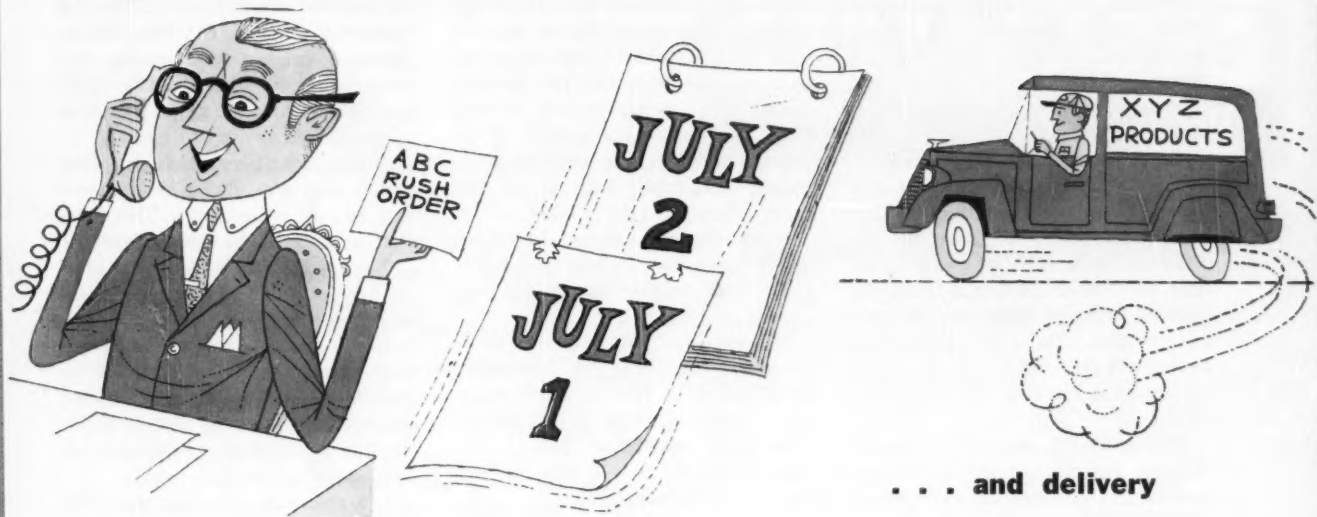
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Rush Calls Hurry CPI Deliveries

Fast delivery is becoming crucial in winning and holding business. Buyers, working from virtually no inventory, are putting the squeeze on sellers, demanding rush deliveries much of the time. And the outlook is for no letup in these pressures, despite the economy's upswing.

Although requests for rush deliveries—generally those needed within 24 hours—are not the rule, the average order-to-delivery time for all sales has been cut in recent years from about a week to one and a half to five days, depending on customer location. Even long-distance shipments have been speeded up. One Eastern chemical firm moves truckloads of products to Los Angeles in less than six days, Dallas in less than four.

To speed response to orders, producers are building finished-product inventories (*CW*, April 15, p. 121), expanding local storage facilities close to their customers, and adding to their truck fleets as well. Result: same-day or overnight delivery is now an accepted sales condition.

By streamlining their handling and order-processing operations, many companies have managed to lead in the fast delivery race without hik-

ing their over-all distribution costs.

Nationwide Pattern: Most chemical firms agree that the quickened delivery pace prevails throughout the country. One specialty organics producer reports the most abrupt pickup in its rush delivery demands have come along the Eastern seaboard from Boston to New Jersey, but it observes a similar trend in Chicago and Los Angeles as well.

West Coast producers, particularly, are taking a supermarket approach to delivery, intent on turning over supplies every day and keeping as little as possible in inventory. One chemical seller points out that orders coming in before 2 p.m. can be delivered the next day, sometimes the same afternoon. This improvement in West Coast delivery service is attributable to two major factors:

(1) The volume of chemicals produced on the West Coast has grown rapidly in recent years. This means more local delivery available, from local production rather than from more-distant sources.

(2) There has also been widespread growth in delivery facilities: more bulk-storage terminals and increased lease-truck operations. So fast is the work

pace that one company sent a crew from its Eastern headquarters to study the delivery techniques of its West Coast coatings plant—traffic management efficiency there had outstripped that of the home office.

Throughout the U.S., other than in major industrial centers, local distribution centers are multiplying. Result: more storage and warehouse points near customers. Among cities witnessing this growth: Atlanta, New Orleans, Dallas, Kansas City, Phoenix.

Distributor Growth: In some instances, manufacturers feel it's more economical to turn product delivery—particularly less-than-carload business—over to a distributor. One organics producer has even reduced its own warehouse facilities, now relying almost entirely on distributors.

One distributor is handling this business increase by establishing resident salesmen in a number of locations, keeping stock in public warehouses. Then, as volume picks up, full-fledged sales branches and storage centers are established. (This distributor set up 10 new ones in '60.) Another distributor, moving to supply customers virtually on demand, reports a storage space expansion of

75% and doubled inventories within the last year.

Data Processing: Besides making more local storage or more trucks available for order shipping, many companies save time by operating centralized data-processing systems. These setups generally link plants, warehouses, ordering and shipping points, providing quick action and communication on rush shipments, inventory levels, for sales, traffic and accounting departments.

U.S. Industrial Chemicals Co. has had such a system in operation for about three years. By using this coordinated setup, USI says that up to four days have been cut from the interval between order receipt and delivery date. And a new center will be ready in early '62 for Chemstrand's marketing department in Greenville, S.C.

Higher Costs? Although chemical shippers report that more frequent rush orders generally boost delivery costs, in some instances distribution expenses have been reduced. The cost of setting up storage points near customers is often counterbalanced by stepped-up local business, less road-time for product delivery. Another indication of relatively stable transportation costs: little increase in overtime wages paid to distribution personnel.

Keeping close tabs on distribution costs, chemical producers agree that most customers give adequate delivery notification, which helps suppliers schedule their own production and inventory control. But last-minute orders have always been considered a normal part of doing business. "What we need to do now," says one plastics supplier, "is to convince customers that continually working with too small an inventory, depending on rush delivery, is potentially more dangerous to them than to us. If a rush order is delayed, having to shut down his plant would cost the buyer more than his low inventory would save. We might lose a truckload's business, but he would lose a day's output, maybe two."

Product Differences: In various product lines, some companies report no noticeable variation in delivery demands. There are, however, fewer rush-delivery requests for heavy chemicals—such as sulfuric acid or ammonia—than for specialty chemicals,

plastic resins and agricultural products.

Fertilizer makers are especially susceptible to seasonal, short-notice orders. Case in point: International Minerals & Chemical Corp.'s automatic data-processing has helped speed up distribution from its fertilizer sales department. Set up just this year, the centralized system is geared to coordinate production and delivery during the spring selling season. Orders are flashed immediately to the appropriate plant and railroad, completing scheduling activity on the order in less than 30 minutes.

In addition, the company has set up its facilities for 24-hours-a-day, 7-days-a-week loading during the rush seasons ahead.

Meanwhile, IMC's barges of phosphate spotted along the Mississippi River serve as floating warehouses, and other stockpiles of phosphate have been established around the country. Result: two- to three-day reductions in delivery time.

Another commodity reflecting the rush delivery problem in the Midwest is ammonia. In recent weeks, four producers have disclosed plans or launched projects designed to place stocks of ammonia closer to the major farm markets. Phillips Petroleum has set up refrigerated storage facilities at East St. Louis, Ill. Others also moving in on the markets: W. R. Grace at Meredosia, Ill. (with 16,000-tons refrigerated facility), Monsanto at Muscatine, Ia. (with 15,000-tons capacity) and American Oil Co.'s Nitrogen Products Dept. at Joliet, Ill. (with a 15,000-tons refrigerated storage setup).

Here to Stay? Although there are scattered signs that perhaps some chemical users are beginning to rebuild their raw-material inventories—as the economy picks up steam—few marketing and distribution men really expect any notable general improvement in the tight rush-order situation.

Rather, most of them accept current fast-paced order-delivery schedules as a permanent change in their operations, a natural result of the sharp competition in today's buyers' market.

Doubtless, today's faster delivery schedules impose a host of new, difficult problems upon chemical marketing men, but those who excel gain a powerful sales weapon.

Lighter Drums Ahead

Lightweight, 55-gal. steel drums are likely to become still lighter when a new, 24/20-gauge drum (24 for walls, 20 for head) emerges this fall from the research labs at Battelle Memorial Institute (Columbus, O.). Potential advantages: original cost savings upwards of \$1.40/drum — it is 15-20 lbs. lighter than 20/18-gauge drums — plus freight savings to buyers.

A premium, high-strength (but more costly) steel now under development may be used in the drums. This, however, might limit the expected savings.

The sponsor of the four-year project — Steel Shipping Container Institute (New York)—says that no information is available now on the type of steel or construction methods to be specified. But all details, including possible manufacturers, will be publicized in advance of the introduction date, sometime this fall.

CPI observers point out that even then potential users of the new drums must have them approved by truck and rail carriers. This has been known to take several years (*CW*, Sept. 13, '58, p. 52).

Reuse: Reconditioners are divided over the practicality, or possibility, of reconditioning and reusing still-thinner-walled drums.

The same question of possible break-in difficulties marked the introduction of the 20/18-gauge drum (*CW*, May 16, '59, p. 62), but they have been successfully reconditioned an average of four times.

The 15-20-lbs./drum weight saving expected from the new models stems from thinner steel sheet used. The 24-gauge (Manufacturers' Standard Gauge) walls (0.0239 in.) and 20-gauge heads (0.0359 in.) are substantially thinner than the 18-gauge (0.418 in.) sheet now widely employed in the CPI.

Some users reported that the 20/18-gauge drums were easily dented or punctured, or that they collapsed too readily when hot liquids cooled, forming a vacuum. One major CPI shipper, however, says these were just "growing pains" that occurred while shippers adapted loading and moving methods to the new drums. At the same time, this firm looks for even lower packaging costs when the still-lighter drums are introduced and accepted.

*Yours...from the pioneer of
applied gas chromatography...*

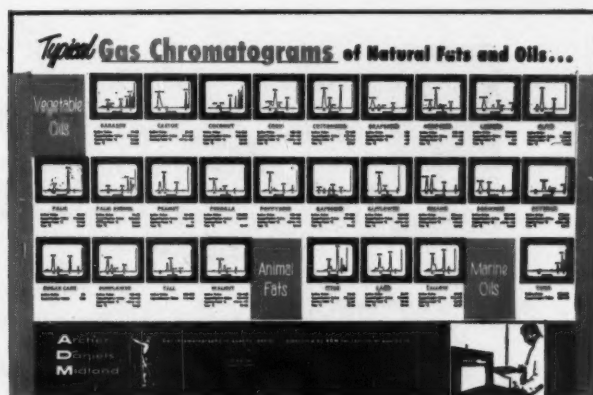
Two ways to look at Fatty Acid Quality

The composition and constants of natural fats and oils . . . pictogramed and charted for you by ADM through the use of gas chromatography. We'd like you to have these two 27" x 17" wall charts.

You'll find this information helpful in your work. Also, we want to assure you that ADM chemicals live up to these standards . . . shipment after shipment. And we want to remind you that ADM—the firm that developed gas chromatography techniques for analysis of fatty acids and nitrogen chemicals—will continue to supply the most economical quality fatty chemicals needed for every task.

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Composition and constants of *Fatty Acids*....


COMPOSITION AND CONSTANTS OF NATURAL FATS AND OILS


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FAT	FATTY ACID		GLYCERIDE		SAPON		SOLUBLE		INSOLUBLE		SOLUBLE		INSOLUBLE		SOLUBLE		INSOLUBLE	
	NAME	NO.	NAME	NO.	NAME	NO.	NAME	NO.	NAME	NO.	NAME	NO.	NAME	NO.	NAME	NO.	NAME	NO.
Tallow	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1
	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2
Suet	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1
	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2
Lard	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1
	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2
Vegetable Oil	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1	Stearic	1
	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2	Myristic	2

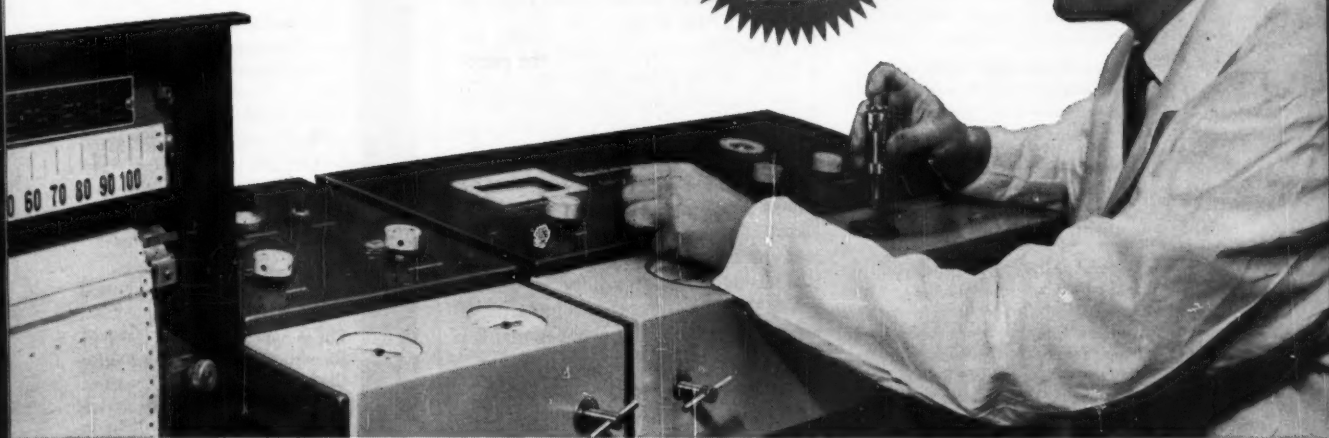


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GENERAL  ELECTRIC

SALES

Long Maritime Strike?

Last week the massive maritime strike, which has tied up some 80,000 workers and nearly 1,000 U.S.-flag merchant vessels on three coasts, closed out its first week. The consensus among chemical distribution and purchasing men: It hasn't been bad so far. The question: How long will it continue?

Few chemical process companies have suffered severe shortages of raw materials or insurmountable delivery problems because of the idle American ships. Main reasons: early planning to build some inventories and to shift movements to foreign-flag vessels, and numerous contracts with independent unions.

But oil refiners felt the effects of the walkout in several locations, and there are definite indications that a prolonged strike of three weeks or more would bring severe shortages of petroleum products in some areas, particularly fuel oil and gasoline. At least two refineries in the Marcus Hook, Pa., processing area were shut down by pickets from one of the striking unions (National Maritime Union), and others in the Houston area were slowed by union interference.

The busy port of Beaumont, Tex., was unaffected and only five of Houston's 32 general cargo docks were closed. Chicago and Los Angeles reported only minor disturbance because of the strike.

Dim Prospects: Chemical processors using great quantities of bulk raw materials that are moved via the sea were beginning to wonder last week what might develop in the period ahead. Some companies, for example, have laid plans for a month-long strike, have prepared to rail-ship some of the commodities they normally receive by ocean freighter or tanker. And Northeastern firms, particularly, are concerned about chances that fuel oil stocks will be dangerously low if the strike lasts much longer.

In fact, some companies are making plans to insure that the ocean idleness doesn't disrupt their inland waterways movements. International Minerals & Chemical Corp.'s traffic manager, Eugene Landis, says he is "quite concerned" about disruptions of shipments of phosphate chemicals from Tampa, Fla., to IMC's Chicago fa-

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Dyeing assistant

acetic anhydride

Acetylating agent
Dehydrating agent in nitration
and sulfonation reactions, etc.

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Ca or Na salt used as
bread mold inhibitor

propionic anhydride

Acylation agent
Intermediate

n-butyric acid

For the preparation of butyric
esters useful in formulating
perfumes and flavorings

n-butyric anhydride

Acylation agent
Intermediate

isobutyric acid

As a starting point for
the synthesis of plasticizers,
perfume materials
and lacquer solvents

isobutyric anhydride

For the preparation of
aromatic esters for perfumes

2-ethyl hexoic acid

Pb, Mn and Co salts are used
as oil paint driers; Zn and Na
salts as emulsifying and
dispersing agents

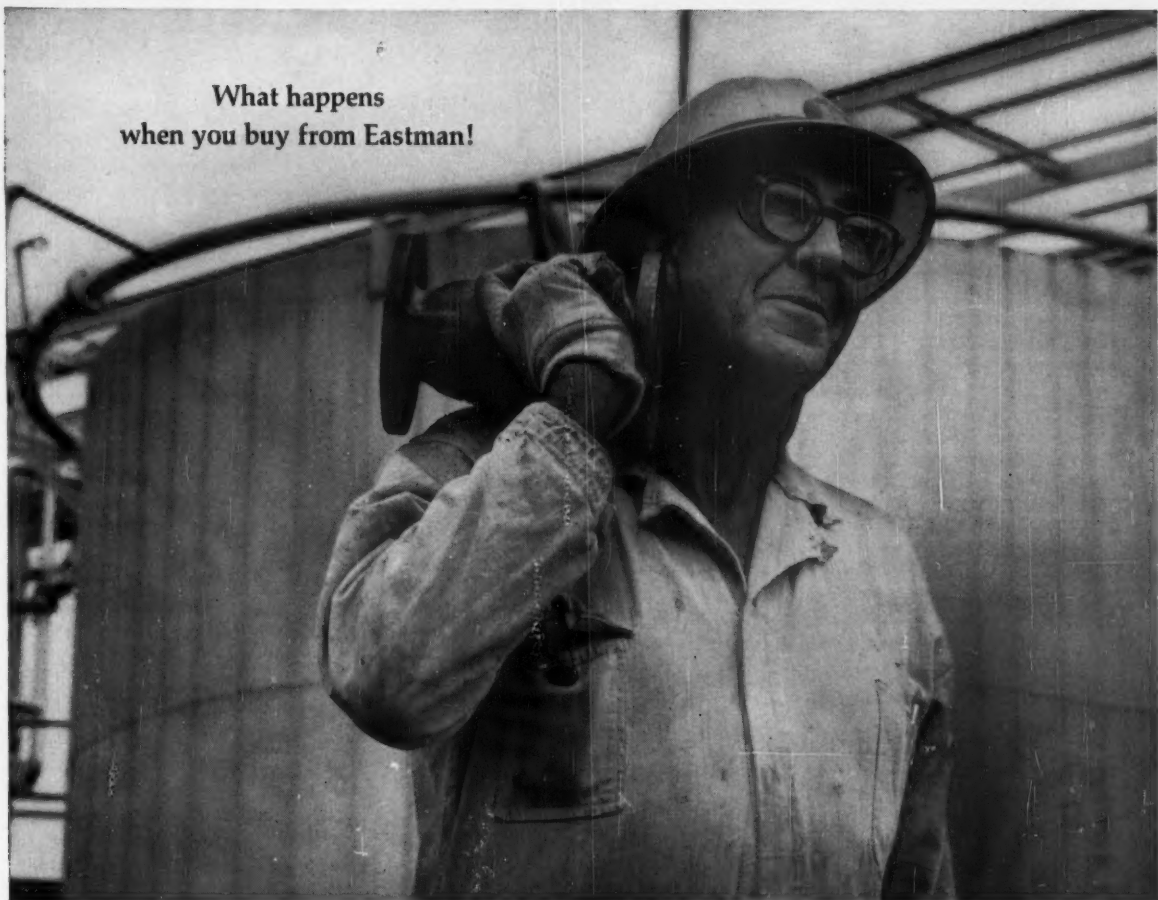
crotonic acid

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reactive intermediate

For properties and shipping information on these and other Eastman products, see **Chemical Materials Catalog**, page 363 or **Chemical Week Buyers' Guide**, page 107.

Eastman

What happens
when you buy from Eastman!



The case of the culprit catalyst

"The phone was ringing when I walked into the office on that Monday morning," mused one of our regional sales managers.

"The customer's greeting was rather cheerful considering the circumstances he then proceeded to relate.

"In his own words it went something like this: 'We have a new process technique out here, but we're not overly proud of it. We're making aluminum acetate...using as reactants your glacial acetic acid and one of our new aluminum storage tanks.'

"I was glad he still had a sense of humor but wished that I had taken the day's vacation, which was briefly considered late Sunday.

"Well, he went on to relate that their yields on a process (not the new one he had just mentioned) in which our acetic acid was one of the reactants

had dropped off alarmingly. While checking out process controls and materials they found aluminum acetate in the acetic acid storage tank.

"Under the circumstances his conclusion that our acid contained a catalyst for the unwanted reaction seemed even to me a reasonable hypothesis.

"Arrangements were made to send a large sample to our Acid Division Control Laboratories for complete analysis, and I held my breath several days until the final report came in.

"A metal catalyst was present, but one that for a number of good reasons we avoid like the plague. Armed with the information that it was extremely unlikely that contamination occurred prior to unloading, we dispatched a technical service man to the customer's plant to help find out where it was coming from.

"And with the aid of an improperly functioning check valve, he did. Seems that the acetic acid storage tank was connected directly to a reactor in which the metal catalyst was (as it should have been) present in salt form. Trace amounts were reaching the storage tank...and you know the rest.

"Fortunately, tank damage was not extensive, and by filtering, they were able to make use of the acid containing the aluminum acetate. After cleaning out the tank it was filled back up... with a new supply of our pure glacial acetic acid.

"Oh yes, a brand new check valve was installed, too."

The normal way we keep our customers happy? If necessary, yes. But more an example of the interested personal service you get when you buy from Eastman.

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Handling/shipping ease—Nalco 680 is easily and rapidly dissolved in water. Its high concentration means that less 680 is needed per process, saving warehouse space and reducing shipping expense.

The foregoing is only a brief description of the uses and advantages of Nalco 680 sodium aluminate. For complete information write for a copy of Nalco Bulletin K4. Or, call your local Nalco field representative.

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cilities. (These products move to the Mississippi via ocean tanker, then go upstream on barges.)

DATA DIGEST

• **Wetting Agents:** Brochure outlines applications, packaging and handling of surface-active wetting agents. Table lists properties, composition and wetting times in water, acid and base. **Nopco Chemical Co.** (60 Park Pl., Newark, N.J.).

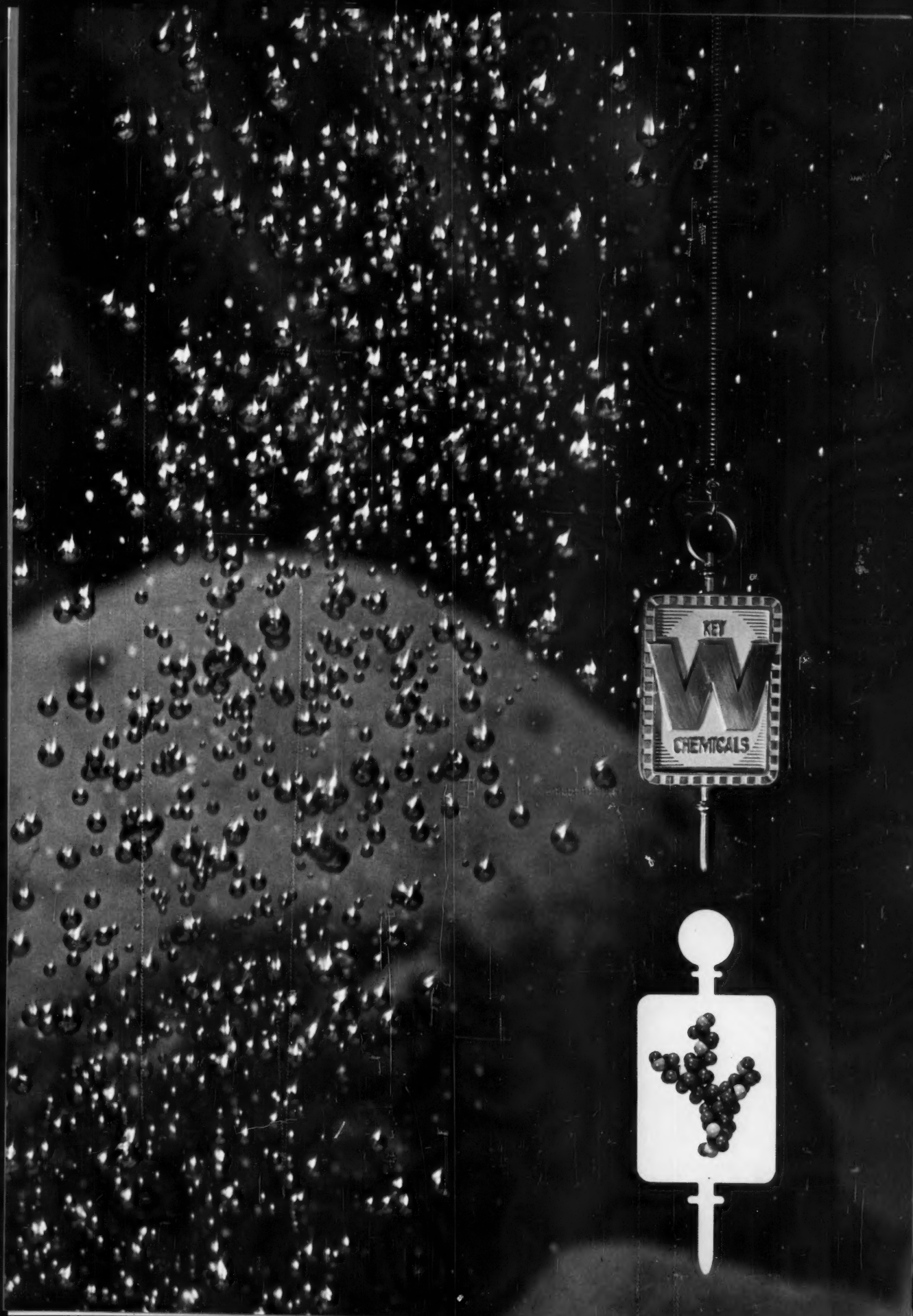
• **Hexachlorocyclopentadiene:** Technical bulletin (No. 65) describes reaction conditions of this chlorinated hydrocarbon, including structural formulas of the products. Typical end-products: pesticides, nonflammable resins, and intermediates leading to fungicides, germicides, pharmaceuticals, dyes and paint resins. The bulletin also includes physical properties and handling recommendations for this highly reactive compound. Hooker Chemical Corp. (Niagara Falls, N.Y.).

● **Product Reference File:** New, 12-page booklet describes physical properties and suggested uses of company's full product line: polyvinyl-formal, -butyral, -alcohol and -acetate; resins; emulsions and spray-dried powders. Dept. DP, Shawinigan Resins Corp. (Springfield 1, Mass.).

● **Sludge Preventive:** Technical bulletin (No. 461) describes use and advantages of liquid fuel oil additive for sludge dispersion and prevention of excessive soot formation and corrosion. Universal Refining Products, Co., Inc. (1133 Broadway, New York 10).

- **Mildew Protection:** Brochure outlines case histories of mildew-susceptible products (wood, fabric, paper and plastics) and how they are protected by new preservatives. Scientific Chemicals, Inc. (1627 South Kilbourn Ave., Chicago 23).

- **Antifoam Agents:** Process bulletin (F-1) outlines antifoam requirements, characteristics and methods of application for foam control in pulp and paper mill systems. **Nalco Chemical Co.** (6216 West 66th Pl., Chicago 38).



cooling

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...and a Wyandotte key chemical that helps water do a year-round job

Your automobile engine needs cooling in winter as well as in summer.

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Key chemical: *Wyandotte ethylene glycol receives the extra care in production, quality control and shipping that distinguishes all Wyandotte key chemicals. It's our guarantee of satisfaction . . . a plus factor customers have found valuable.*







How a Wyandotte Key Chemical Can Help You

If your technology falls in one of our many fields of concentration, talk over your requirements with a Wyandotte sales representative.

Let him give you the story behind key chemicals. He will also open up to you the opportunity to draw on our experience in serving such major industries as: paper, glass, rubber, soaps, detergents, pharmaceuticals, paints, plastics, to list a few.

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Wyandotte Chemicals Corporation, Wyandotte, Mich.



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THE CHEMICAL INDUSTRY'S utilization of four basic raw materials are depicted here . . . they are: salt, limestone, crude oil, coal. Wyandotte derives many of its key chemicals from them, including caustic soda, soda ash, Pluronic® polyols, chlorine, Purecal® (a highly refined calcium carbonate), and bicarbonate of soda, to mention a few.

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KEY CHEMICALS ARE SHIPPED by the most economical means—including our own fleet of barges. Wyandotte not only helps customers save money in shipping, but will also work out, with them, the most advantageous ways to use, handle, and store key chemicals.



Bringing Home Beryllium

New ore-treating techniques are claiming elusive beryllium from Utah's Spors-Topaz mountains.

Significant details are reported this week on two rival processes for recovering beryllium from the much-talked-of but hard-to-handle ores from the Spors and Topaz mountains in Utah. One process is already operating commercially in a prototype plant; the other is still in pilot plant. Both will help switch to the U.S. an ore-processing industry currently valued at \$5 million/year. They will provide a guaranteed supply necessary for the fast-growing \$50-million/year beryllium oxide and beryllium metals industry.

Last week, while Beryllium Resources, Inc., was holding a press conference on its process in Los Angeles, V. A. Duff, president of United Technical Industries (Murray, Utah), was telling of his firm's process in New York. (BRI is associated with Brush Beryllium of Cleveland, and UTI is affiliated with Beryllium Corp. of Reading, Pa. — Brush Beryllium and Beryllium Corp. are the only two firms currently making beryllium metal in the U.S. from their own ores.)

Study in Contrasts: While BRI told reporters in Los Angeles about a flotation process, Duff talked about an acid-extraction process. BRI revealed many details of its process—it's running a pilot plant prior to building a commercial plant near Delta, Utah. UTI, vague on most of its process details, has started up a plant at Delta and is designing a \$1-million expansion.

BRI's process turns out a "beryl concentrate"; the firm was not specific about the amount of beryllium in the concentrate and it did not disclose investment costs. UTI, on the other hand, claims a 97% beryllium oxide product (about 35% metal), says its investment costs are about \$6,000/-daily ton of ore. Of UTI's operating costs, Duff says only that its method will cut "considerably" the current costs of processing beryl.

The evident contrast between BRI's and UTI's processes reflects basically different approaches to the problems of claiming beryllium metal or its

oxides from rock. UTI's novel acid-extraction process bypasses many of the present-day steps in beryllium production and gives a ready-to-reduce product. BRI's more-conventional flotation route is aimed at separating Utah ores to obtain the beryl, which must be converted into the oxide before it can be reduced to the pure metal.

This beryl, a crystalline mineral, has been described both as beryllium oxide in combination with alumina and silicon dioxide and as a mixed silicate of beryllium and aluminum—in either case, the beryllium content is about 5%. There are abundant foreign deposits where almost pure beryl can be found in crystalline aggregates weighing as much as 200 tons. Such crystals can be economically hand sorted as they pass along a conveyor belt; but in Utah's Spors and Topaz mountain areas, the beryl occurs finely divided, imbedded in a baked, claylike stone formed from volcanic lava. While its over-all average concentration may be almost as high as in foreign deposits, this ore can never be "hand cobbled" (sorted), as in foreign processes.

Floting Feldspar First: In separating these Utah ores to obtain the equivalent of the imported product, it is logical that the first approach would be to improve the process found most successful in taking impurities out of cobbled beryl. BRI has done this. Already one of the four* major claim-holders in the Spors-Topaz area, it teamed up (*CW*, Nov. 26, '60, p. 39) with Dynamic Metals (Los Angeles), which controls the Van Dornick process, rated as the best for upgrading beryl through flotation.

Flotation, essentially a series of stirred tanks, separates solids by use of air, water and selective wetting agents. Air bubbles, rising through an agitated water mixture of the solid particles, cling to the wetted particles, lightening them and carrying them to the surface as foam, while the rest

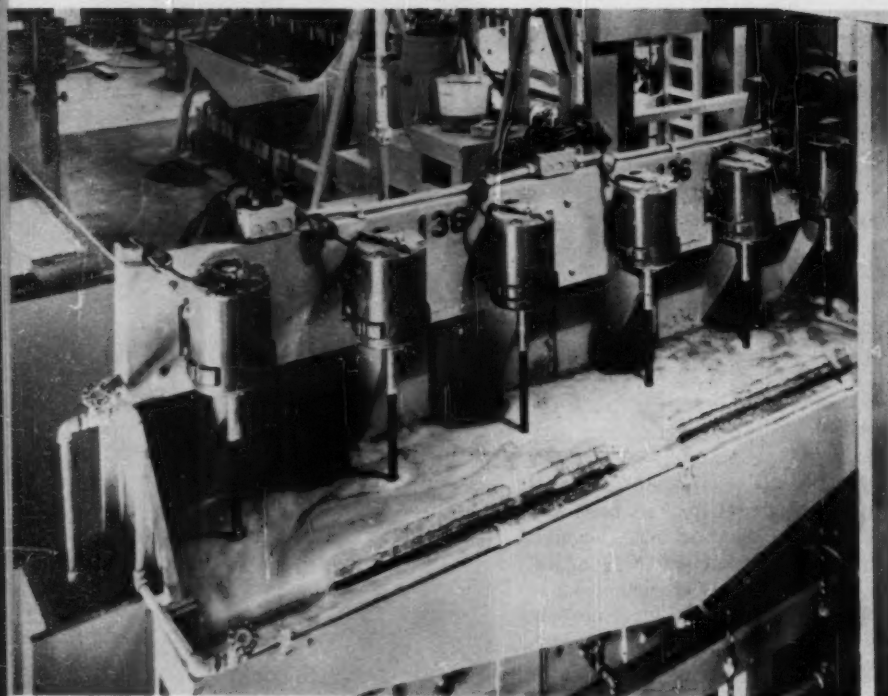
* Others: Vitro Minerals (New York), UTI, and Combined Metals (Salt Lake City).



BRI's Van Dornick, MacAfee, Odlum: Chose conventional flotation process.



CW PHOTO—W. ROSENBLUTH
UTI President Duff: Favors direct acid extraction to win beryllium oxide.



BRI's 'rougher' cell makes a mica-feldspar-bearing froth.

of the ore settles. Theoretically, flotation works effectively only when crystalline particles are distinct. The Utah ores, however, show no single type of beryllium-containing crystal.

Nevertheless, BRI says, there is enough segregation of the beryllium-bearing crystals to allow concentration by flotation. But it had to extend the Van Dornick process: first, a slime is separated through "desliming cyclones"; then a mica-feldspar fraction is floated away from a beryl-bearing froth in a "rougher" cell (*see photo above*).

From the Start: In BRI's modified Van Dornick process, rocky ore is passed through jaw crushers, rollers and a ball mill to reduce it to a fine powder. About 125 lbs./hour of the powder is fed through conditioners to the desliming cyclones in the BRI pilot plant. About 100 lbs./hour is contained in a slurry, leaving the cyclones to the rougher cell. And this separates 20 lbs./hour of feldspar through a "cleaning cell," which recycles back to the rougher cell a skimmed intermediate product in much the same manner that a distillation tower recycles a reflux stream.

From the rougher, the remaining 80 lbs. of beryl-containing ores pass first through conditioners, then

through seven stages of flotation. Only a single "tops" (beryl concentrate) and a single "bottoms" (waste) is separated from the flotation train. And an undisclosed internal recycle is maintained between each pair of flotation stages to obtain thorough separation.

The final product from the pilot process is 4.5 lbs./hour of "beryl concentrate." If it is assumed that the initial ore contained 0.5% beryllium oxide (reported as typical of Spors-Topaz ores) and that nearly all of the beryl in the ore has been recovered, this concentrate is almost pure beryl. It might thus be expected to be a finely divided equivalent of the hand-cobbed rock currently imported. And as such it is ready for conversion, through beryllium hydroxide, into beryllium oxide, and then, through subsequent magnesium reduction, into beryllium metal.

Sulfuric's Selective Solution: In contrast with physical flotation, UTI's chemical process bypasses the concentrated beryl stage and goes from ore through beryllium hydroxide directly into beryllium oxide. It depends on one key factor: sulfuric acid dissolves all the minerals in Spors-Topaz ores except the beryllium oxide. Economics, therefore, are tied to this route's sulfuric acid consump-

tion. This, says Duff, amounts to 0.5 ton of acid for each ton of ore processed.

Because of this high acid consumption, three of the U.S.'s largest sulfuric acid producers are bidding to construct plants next to UTI's Delta ore-processing plant. Duff says that UTI, which has the only water well in the area (800 ft. deep; 3,000 gal./minute), will lease the land and provide water for acid production, then purchase the acid for the ore-processing plant.

In the UTI process, ore is first ground and then "opened" with the sulfuric acid—i.e., the acid is mixed into the ground ore until it becomes a damp claylike mass in which minerals other than beryllium oxide are sulfonated. The opened ore is then roasted at "high temperatures," and impurities are extracted through a series of steps. Although the actual processing train is not disclosed, neither solvent extraction nor ion exchange is used.

Duff says the UTI process is not unusual, does not include any features that a good chemical engineer couldn't work out independently. He's convinced that the acid-extraction process is more economical than the BRI process on a commercial scale and that Beryllium Corp.'s competitor, Brush Beryllium, will also devise an acid process within the next few years. "The demand for all this acid," he says, "is going to bring appreciable industry to the Delta area."

Break Down Brittleness: These new processes are almost certain to bring a radical switch in the economics of beryllium ore production, but they will not insure the full-fledged boom predicted by some sources. Beryllium, which has the highest strength-to-weight ratio of any metal, has been touted as the answer to aircraft industry problems. Many plane builders say that "someday" they will use up to 1 ton of beryllium in each large plane.

But beryllium is brittle—a handicap more significant than limited supply. Unlike aluminum and steel, it cannot hold up under modern aircraft vibrations. And until metallurgists overcome brittleness, beryllium growth will be confined to other applications — missile nose cones, atomic reactor equipment and alloying with copper and steel. (These

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uses, however, have so far expanded beryl consumption from 2,900 tons in '50 to an estimated 8,410 tons in '61, and it's predicted that 11,300 tons will be used in '65.)

And while costs are of great concern to the beryllium producers, a reduction in metal prices is not likely to bring on a boom. The weight saved in beryllium structures is estimated to be worth a premium of about \$200/-lb. over aluminum, if these structures can be used in modern jets. But that's only if there is a real breakthrough in eliminating brittleness. And so far, there have been no hints that metallurgical progress has matched refining gains, which would bring such a breakthrough into sight.

European Helium

Czechoslovak and Soviet scientists recently teamed up to build Czechoslovakia's first helium liquefaction installation at Nuclear Research Institute (Prague).

The Czech plant is built for an output of 11 liters/hour of liquid helium, plus about the same amount of liquid hydrogen. Consumption of liquid nitrogen in the main liquefier itself is 18 liters/hour, and an additional 10 liters/hour are used for auxiliary purposes.

Cycle: The new liquefaction system cools the helium down to about 14 K, then uses the Joule-Thomson effect to throttle the gas down to 4.2 K (—269 C). The cycle starts with compression at normal temperatures to about 25 atm. Then the helium is gradually cooled in the liquefier to near condensation temperature. Drops of helium are separated. And finally there is isobaric reheating of the cooling medium. The latter is done in an exchanger, where, at the same time, the helium passing to the throttling valve is cooled.

Equipment: The apparatus is essentially a cascade cooler using liquid nitrogen and liquid hydrogen. The nitrogen is supplied from a conventional unit, while the hydrogen is liquefied directly in the system simultaneously with the helium.

Gas of very high purity is required for liquefaction. Consequently, before the gas enters the main circuit, it is sent through a high-pressure activated-charcoal purifying trap cooled by liquid nitrogen to 80 K.

A low-pressure purifying system is used inside the circuits for both helium and hydrogen. It uses silica gel to continuously dry helium gas returned to the system after the liquid has vaporized.

Hydrogen indicators have been installed near all the equipment, and explosionproof motors and lighting have been used to avoid hazards. The plant's lightweight ceiling can be inclined so that hydrogen, if it does leak, can freely rise to ventilators above the roof.

Hold It: One of the important factors in evaluating the potential for liquid helium is storage. Only recently have U.S. producers been able to move liquid helium any great distance. Reason: its temperature is so low that the liquid simply vaporizes and it may leak through containers. The nitrogen containers used by the Czechs hold the liquid for about 24 hours.

Heat Booster

A combination chemical and electrical burner that can supply heat in the 3000-6000 F range has been developed by Arthur D. Little, Inc. (Cambridge, Mass.).

The device, patented by Bela Karlovitz, of Combustion and Explosives Research Inc. (Pittsburgh), boosts the heat energy output of an ordinary fuel-oxidant flame by superimposing on it electrical energy from a low-current, high-voltage, alternating-current discharge.

Addition of electrical energy equal to one-half the chemical combustion energy of an ideal fuel-air mixture raised the gas specific enthalpy (heat content) from 1,100 Btu./lb. to 1,600 Btu./lb.

Handy Flame: Potential applications for the Combex-ADL burner include impingement heating for processes such as cutting, welding, spalling and drilling, radiant heating (as in open-hearth steel furnaces) and heating in fluidized-bed processes.

The burner's economy stems from the inexpensive chemical energy. Actual applications would depend on the fuels, oxidants and electric power used. Design flexibility permits use of natural gas, fuel oil, powdered coal or hydrogen; oxidizers include air, oxygen, fluorine or exotic mixtures.

Describing the new burner at a meeting of the American Gas Assn.

recently, ADL researchers drew a sharp distinction between this development and electric-arc techniques. The high-current, low-voltage electric arc yields a very high temperature in a narrow column of the arc. Conversely, the low currents and high voltages of the new burners produce a discharge that is uniformly distributed throughout a much larger volume of the flame. Engineers also claim that development work to date has employed an electrical discharge from a 60-cycle ac. power supply at potentials up to 2,000 volts and currents to 12 amperes — conditions usually available at industrial sites.

PROCESSES

Gold Plating: A new acid-type electroplating formulation that yields a pure 24-karat-gold deposit reportedly of any practical thickness has been developed by Sel-Rex Corp. (Nutley, N.J.). The solution is supplied in two portions, solid and liquid. The solution makeup, which is the attractive innovation, is proprietary information; patents have been applied for.

Classification Plant: A new compact classification plant that operates automatically without operators and without power—except for pumps—is now available from Comco Corp. (Philadelphia). The plants are custom-assembled from standard components, such as horizontal thickeners, chest wave classifiers, bicone thickeners and horizontal elutriators. Fine materials ranging from 30 microns to 6 mm. can be classified with high standards of accuracy, Comco says.

Sugar Beets: Holly Sugar Corp.'s (Brawley, Calif.) new sugar beet processing system includes storage of half-processed beets in huge plastic-lined steel tanks so that the production time can be extended 50-60 days. The additional time (ordinarily only the 90-100 days of beet harvest time can be used) has helped raise capacity from 79 million lbs./year to 125 million. Equipment for the new operation includes five ellipsoid tanks, 40 ft. high and 102 ft. in diameter, which store beets directly they are brought in from the fields. Concentrated "thick juice" covers the beets inside the tanks to eliminate spoilage.



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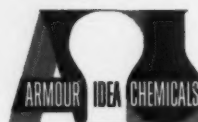
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plied at an appropriate stage in processing, these liquid conditioners assure free flow of the product in process, function as anti-caking and anti-dusting agents during subsequent handling and storage.

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A smoother, faster, more even flow of product results when Armoflos reduce friction between particle surfaces. This lubricating action reduces abrasion and thus reduces "fines" and dust formation.

Armoflos are now being used commercially with a number of products and current testing indicates many more potential applications. The versatility of Armoflo compounds is demonstrated by the following three categories of materials.

FERTILIZERS

Armoflo compounds are effective conditioners for all types of mixed fertilizers—low as well as high analysis grades. The compounds act as anti-dusters on low analysis grades and as anti-dusters and/or anti-cakers in high analysis grades. Armoflos are being used effectively as anti-dusting and anti-caking agents on these typical grades:

Anti-caking and Anti-dusting of High Analysis Grades	Anti-dusting of Low Analysis Grades
0-20-20	0-20-0
5-10-5	3-12-12
5-20-20	3-9-18
7-21-21	3-9-27
7-28-14	4-12-8
10-10-10	4-12-12
12-12-12	5-40-0
15-15-15	8-8-8
17-7-0	10-6-4

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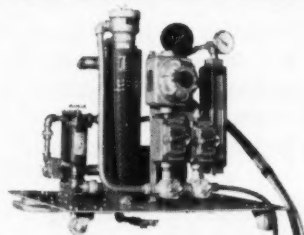
Many of the salts used in formulating mixed fertilizers are hygroscopic and must be conditioned to prevent caking. Armoflo compounds successfully inhibit caking, improve product flow and reduce dust resulting from abrasion. Typical of such Armoflo applications are:

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Monoammonium phosphate	Sodium nitrate
	Urea (prill & crystal)

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Fluorspar	Sodium chlorate
Glues (mixed, powdered)	Sodium metasilicate
Guar gums	Sulfur
Hypochlorites	Sylvite
Insecticides	Thermosetting plastics
Magnesium oxide	Zinc chloride
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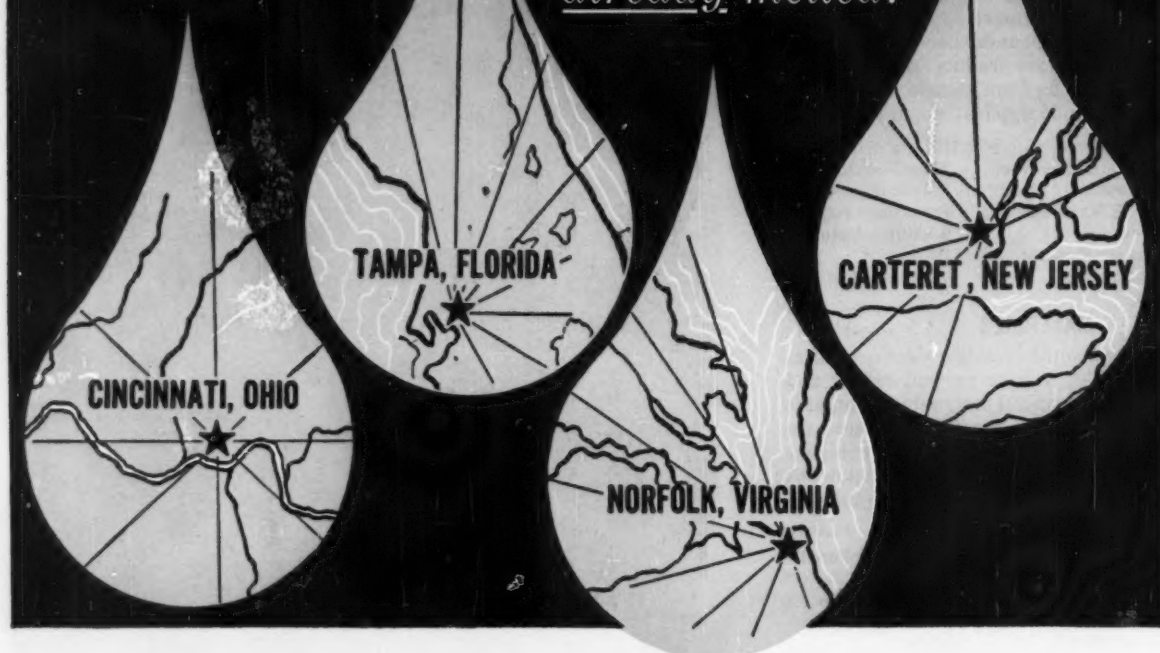
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Technology

Newsletter

CHEMICAL WEEK

July 1, 1961

Nuclear heat to dry phosphate rock will be the subject of a study carried out by Dorr-Oliver (Stamford, Conn.) for L'Office Cherifien des Phosphates (OCP), an agency of the Moroccan government. OCP has piloted a new phosphate drying process at Khouribga. It's a vapor-compression method, calls for substantial quantities of steam.

The firm has contracted with Dorr-Oliver for a feasibility study and is interested in nuclear energy because of the high costs of conventional fuels in Morocco. Burns and Roe, Inc. (New York City), and Arthur V. Peterson Associates (Westport, Conn.) will work with Dorr-Oliver's project engineering group on the nuclear aspects of the problem.

The first experimental plant to extract fresh water from the sea was officially started up last week as President Kennedy, sitting in the White House, pressed a button that began operations in Freeport, Tex., 1,500 miles away. Actually, the plant had completed eight days of successful operation a month ago (*CW Technology Newsletter*, June 10). And the Texas Dept. of Health Laboratories had tested the water and approved it for public use.

A Linde liquid oxygen plant blew up in Michigan last week killing three people. The plant supplies the adjacent Great Lakes Steel Corp. in Ecorse, a Detroit suburb. A fire following the explosion was quickly brought under control, but indications are that damage was extensive, and it will be some time before the plant is back in operation. In the meantime, Linde will ship in liquid oxygen for the steelmaker.

Teams are examining the ruins, trying to pinpoint the cause. Little is known about it yet, except that the trouble probably occurred in the compressor section.

Promising results in the fight against arthritis were achieved with a new drug called oxyphenbutazone. A chemical cousin of an earlier drug, phenylbutazone, the newcomer was used on more than 1,000 victims of various rheumatic disorders. In the case of rheumatoid arthritis, Dr. Irving L. Sperling (New York City) reported that response to the new drug was good in 70% of the patients, compared with 44% when phenylbutazone was used.

Hope on the horizon for treating drug addicts. A natural body chemical, called DPN (diphosphopyridine nucleotide), has enabled drug addicts to stop using narcotics quickly, permanently and with no side effects. Although several years will be needed for full evaluation, Dr. Paul O'Hollaren (Shadel Hospital, Seattle, Wash.) cited effective use of DPN by 160 patients. Abbott Laboratories (Chicago) supplied the drug.

Technology

Newsletter

(Continued)

Phenol via direct oxidation of benzene may now be feasible on both an economic and yield basis. That's the startling conclusion experts are drawing from Schenectady Varnish Co.'s bland disclosure that it will build a "full-scale" phenol plant at Rotterdam Junction, N.Y.

The new unit (probably in the 20-25-million-lbs./year range) is scheduled for early '62 operation, will mark the 55-year-old company's entry into basic raw-material production.

Company officials will not comment on any facet of the venture, but it is known that the firm has had an interest in a phenol process posing fewer by-product problems than do present sulfonation, chlorination or cumene routes.

Vapor-phase oxidation of benzene is not an entirely new process—it was tried and discarded years ago because of poor yields. But a new catalyst system and probably a novel twist on reactor design may make the Schenectady Varnish process profitable.

•
A chemical method of drying California Redwood (used in cooling towers) to 10% moisture content in eight days instead of the usual several months has been developed at the U.S. Forest Products Laboratory (Richmond, Calif.). The process, called solvent seasoning, also extracts valuable chemicals otherwise lost—e.g., tannin—and removes some undesirable chemicals that stain the wood during drying. In the process, green boards are stacked vertically or horizontally in a vapor-tight extraction chamber. A hot solvent—acetone at 130 F—is circulated in the chamber and then recovered by continuous distillation. Plans have been drawn for a commercial unit 284 ft. long, 16 ft. high, 8 ft. wide. This could turn out an estimated 16,000 board ft. of seasoned 4x4 heavy Redwood sinker stock every 24 hours.

•
A European process to turn garbage into organic compost will get a new push in the U.S. soon. The Seagrave Corp. (Columbus, O.) last week acquired U.S. rights to build plants using the Dano bacteriological method of decomposing refuse. Seagrave got the process by taking over Arizona Biochemical Corp., which had the exclusive license, and next month will start to build the first Dano plant in the U.S., a 300-tons/day unit for the city of Phoenix, Ariz.

The process, developed in '38, has been widely used abroad. Arnold Saltzman, Seagrave president, says 61 plants have been built, 32 of them within the last five years. John Valianos, president of Arizona Biochemical, says the Phoenix plant will later be supplemented by two other units.

Phoenix is now spending about \$250,000/year on waste removal. Under the agreement with Arizona Biochemical, it will pay more than \$100,000/year, but starting the second year, it will receive a percentage of compost sales.



Shell has three benzene-producing refineries, located near waterways. Barges like these will carry the bulk of 1961's record output.

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CW PHOTO—EDMUND GILCHRIST

ICWU's new school for labor organizers includes courses in public speaking and publicity, mixes 'green-

Training for a New Era in Labor

To meet a stiffening management resistance and increased competition for members, labor unions are upgrading their organizers. The International Chemical Workers Union's new Delaware Valley Staff Training and Organizing Project (Camden, N.J.) underscores this trend. Last week the school—the only one of its kind in this country—began a new term.

"I don't think you'd be right in saying we're going to jump out and start organizing everybody under the sun in the chemical industry, once these classes are finished," cautioned observer Marshall Shafer, ICWU secretary-treasurer (picture, next page). "But I admit we will have a better and tighter organization of organizers when we're finished and that the organizers themselves will be more efficient than they have been."

Despite Shafer's reticence, there's not much question that ICWU fig-

ures its investment (travel, salary, and about \$385 for room and board for each student during the four-week course) will pay off in more members, more victories in National Labor Relations Board elections.

ICWU has about 85,000 members in locals across the nation, a number that hasn't changed much in several years. (Rival Oil Chemical & Atomic Workers membership is off 7.8% since its peak in Sept. '57, is now believed to be somewhat less than 100,000.) Membership gains are often offset by losses chalked up to automation and changing technology. And frequently employees who retire, quit or die are not replaced.

So the problem that ICWU and other unions must ultimately face is to grow or die. The latter is what ICWU doesn't intend to do. Instead, it is building a cadre of well-trained professional organizers who reputedly

thrive on work (14-hour days, night and weekend work are common), although, says Shafer, they "depend on low-pressure tactics."

The training takes place in a basement classroom in Camden's Plaza Hotel, on the nearby South Jersey campus of Rutgers University and in the field. Subjects studied include collective bargaining, publicity, public speaking, union organization, law, NLRB procedures, arbitration, information sources (at the Rutgers library), local union administration, history and structure of the labor movement and union legislative activity (what unions are trying to accomplish). In addition, the students participate in field work, learning the fine points of organizing under expert guidance.

This field work is done among the more than 600 chemical plants, of all sizes, making a wide range of prod-



horns' and seasoned veterans.

Organizing

ucts, located within a 50-mile radius of Camden. Many of the companies are unorganized, others have independent unions. Wages and working conditions vary, and the workers come from diverse nationality groups. So trainees come up against a gamut of organizing problems.

What's So Different? Many unions have training programs. But they're neither as broad nor intense as ICWU's. OCAW, for example, conducts week-long training sessions for organizers at various universities (so does ICWU), including Rutgers, University of Chicago and University of Indiana. Occasionally, men are sent to organizing classes of other unions, such as the United Steelworkers. Considerable time is spent on labor law: "Obviously an organizer must know his rights," says OCAW District 7 Director Clyde S. Shamblen. At Denver OCAW headquarters, the

union has an annual week-long meeting in which normally one day is given over to organizing discussions.

However, Shafer says, there is nothing like the Delaware Valley project in the entire labor movement. Each of ICWU's organizers must take the course. The class now in session has 16 pupils—11 from the U.S., five from Canada who requested to attend. This is the fourth group to take the training. There may be three more. The students are mostly professional organizers, who work full time for the union (they're paid \$145/week). But company employees who aspire to be organizers also are allowed to take the course. They get leave from their employers (union contracts contain the necessary proviso) and are compensated at their regular salary rate by the union while attending classes.

Of the latter, ICWU says geographical location, rather than the company the man works for, is the important consideration. One man, a fertilizer plant employee, came from the Salt Lake City area, where ICWU plans intensified organizing. Others have come from Hercules and American Cyanamid plants, presumably in fertile organizing territory. When the course is completed, the "rookie" goes back to his regular job, receives from ICWU "car money" for his part-time organizing activity. If successful, he may become an ICWU staff organizer.

Shafer recalls that ICWU had some misgivings about "greenhorns" and old experienced organizers attending classes on an equal footing. But the plan works, he says. "Old pros don't always keep up with new ideas. New men haven't had time to become cynical. This program is improving our entire organization, not just the bottom layer."

Mounting an Offensive: ICWU's school itself is recognition that non-union groups are changing complexion—from a preponderance of manual workers to a heavier proportion of white-collar, professional and technical workers. In chemicals, production workers totaled 74.6% of all employees in '48; 62.6% in '59; continued to drop this year (*CW*, June 24, p. 79).

As the ranks of skilled workers

grow, their jobs become routine, prospects of advancement are fewer. Furthermore, computers and other office machinery are threatening office jobs, just as automation affects production workers.

ICWU and other unions see this trend as inviting unionization. They recognize, however, that the old-style organizer's tactics and personality don't appeal to the nonunion groups. Labor contracts must be different as well.

Industrial unions have tended to apply their contracts for production workers to the white collar-professionals without recognizing the latter's special interests. For example, many white-collar employees are women who are not long-term employees, care little about pensions, more about sick leave.

Soft sell is what unions are counting on to woo these workers. This shapes up to what Shafer calls "growing sophistication in the chemical industry labor movement."

One large chemical company reports union organizers "tend to be more gentleman-like than old-timers in their approach. The days of the blunt approach are over," it says. A somewhat new organizing tack stresses political activity. Organizers firmly point out that unions can effectively voice labor's goals before lawmakers.

And Counteroffensives: Unions complain about antiunion articles in plant papers, pictures showing labor violence, stories showing what strikes cost union members, etc. But companies that keep wages and fringes at the high end of industry's scale are least vulnerable to organization. Question is: Will the new crop of organizers dent their ranks?

ICWU's Shafer wants staffers with all-round skills in promoting soft sell.



EEC Labor Mart Expanding

Industries in the six-nation European Economic Community (the Common Market) will now be able to tap the multiple EEC labor market to fill vacant jobs, instead of relying solely on their own countries' labor supply. This comes as the result of a decision by EEC's Council of Ministers last week to get started on a program that will eventually lead to a free flow of workers among the six member-nations.

With the labor market growing extremely tight in some countries—especially Germany—the program can become an important part of the over-all move toward economic integration (*CW*, April 8, p. 41) of Common Market countries.

Under the council's agreement, a European coordination bureau will be set up in Brussels to handle job offers and requests submitted by the six nations' national employment offices. The government of each will cooperate by removing existing restrictions on the number of foreign workers allowed to enter the countries, issuing work permits automatically, permitting families to accompany the immigrant workers, and according them the same salary and treatment as native workers.

Staged Program: During the program's first stage—to last two years—workers will get first crack at job vacancies in their own countries before the jobs are offered to workers of other countries. The national employment offices will have three weeks to fill a vacancy. After that, it must be turned over to the European coordination bureau, which in turn will have three weeks to submit a list of candidates for the job.

Eventually, this priority given to nationals for jobs in their own countries will be abolished. This means—theoretically, at least—that all workers will have an equal chance at jobs in all countries.

The ministers also took the first step to equalize salaries between men and women by setting up a working group to study the exact situation in each country. It will be composed of representatives of government, labor unions, and management. First meeting is slated for July 5.

These were the two main develop-

ments of the ministers' meeting. They also asked the member countries and Greece to sign the agreement drawn up in March to associate Greece with EEC.

But nothing was done about the two biggest questions on the agenda—whether to approve an extra 10% internal tariff cut for Jan. 1 and whether to start EEC's second transition stage on the same date.

France is holding up its agreement on these points until there is a satisfactory agreement on common agricultural policy. But probably nothing will be done about this until next fall, when Germany has its elections. Until then, Germany will not be in a position to make concessions in this politically sensitive area.

LABOR

Settlements: The 162-day strike at Phillips Chemical Co.'s Adams Terminal on the Houston Ship Channel has ended. Members of OCAW Local 4-227 approved the company's back-to-work proposal. Issues: cost to employees of hospitalization insurance; wage scale of clerical workers; company insistence that skilled refinery operators perform minor maintenance chores as part of their regular duties.

The contract is for one year, effective June 18, '61. It calls for an across-the-board increase of 14¢/hour and an additional 5¢/hour for Class 1 and 2 operators and 9¢/hour for janitors.

• Members of the Texas City Metal Trades Council at Union Carbide Chemicals Co. (Texas City, Tex.) have ratified a new, three-year contract, providing an across-the-board 8¢/hour wage hike for 1,700 employees.

The contract also covers increased vacation benefits, improvements in sick leave, overtime and funeral leave, a shift-differential increase of 9¢/hour for the evening shift and 18¢/hour for the midnight shift, and adjustments ranging from 1-10¢/hour for certain crafts on lower pay scales.

The contract, effective from June 15, '61, to June 15, '64, provides for two annual wage-reopener clauses for

negotiation of wages in June '62 and June '63.

• Agreement has been reached between American Enka Corp. and Local 2598, United Textile Workers of America, on a new contract covering more than 2,400 hourly rate employees at the Enka, N.C., plant. The one-year contract contains improvements in provisions primarily in regard to layoffs, recalls, etc., but no general change in hourly wages. Nor does it contain provision for 90-day trial periods on jobs converted from flat hourly rates to incentive systems of payment. This issue was responsible for two past failures to achieve ratification of the agreement by union membership.

• The United Rubber Workers and B. F. Goodrich Co. have signed a new companywide contract providing wage increases, vacation and holiday improvements and supplemental unemployment benefit increases for 11,500 workers in eight plants.

• **Teamsters Lose:** A majority of workers of International Minerals & Chemical Corp. at Bartow, Fla., have voted for ICWU Local 35 as bargaining agent, rejecting the Teamsters Union and the United Mine Workers.

KEY CHANGES

Charles B. McCoy to vice-president, director and member of the executive committee, E. I. du Pont de Nemours & Co., Inc. (Wilmington, Del.).

Chester L. Jones to director of marketing, Monsanto Chemical Co.'s Plastics Division.

Derek Richardson to vice-president for marketing, Chemicals Division; and **Fred H. Edgar** to division vice-president aluminum sales, Metals Division; Olin Mathieson Chemical Corp. (New York).

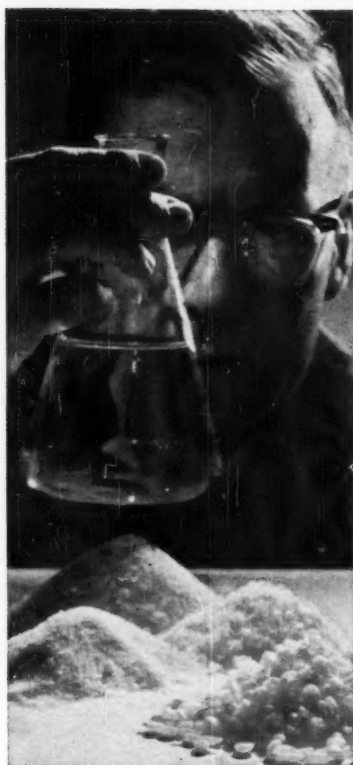
C. Kenneth McCracken to vice-president finance; **Richard S. Runnels** to comptroller, **Dean P. Fite** to vice-president corporate affairs and member of the board of directors, Procter & Gamble Co. (Cincinnati).

Luis de Hoyos to president, Synflour Scientific Laboratories, Inc. (Monticello, N.Y.).

G. Preston Hoff to the board of directors, Resisto Chemical, Inc. (Wilmington, Del.), insulation fabricator.

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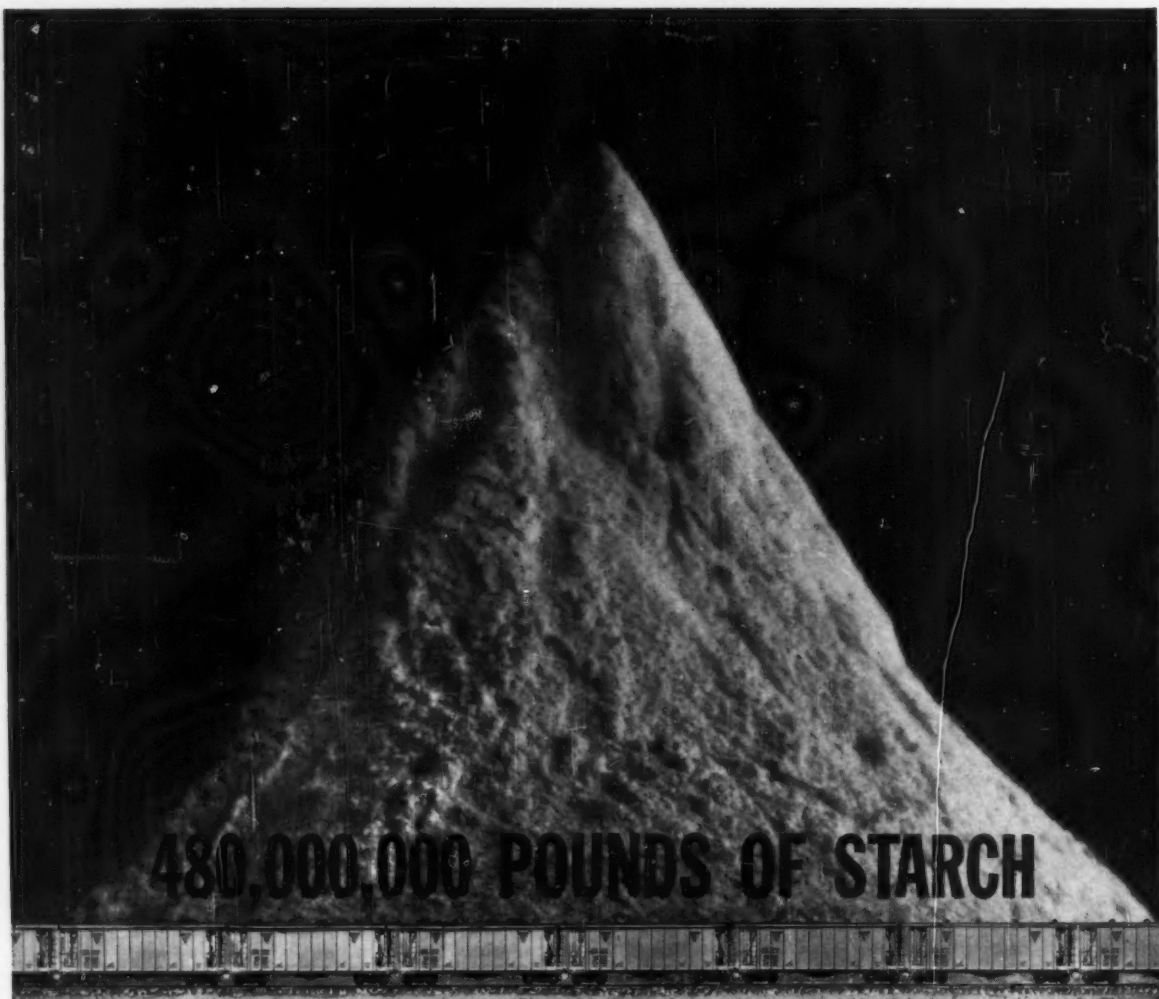
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Market Newsletter

CHEMICAL WEEK

July 1, 1961

Is the plastics industry skidding into a chaotic price war? War or not, it's obvious that continuing price cuts on plastics and resins are intensifying competitive tensions—already drum-tight because of chronic overcapacity problems and imminence of a market free-for-all between new plastics and the older, established materials.

Under the price axe so far this year: polystyrene, high-density polyethylene, polyvinyl chloride. Vinyl resin prices are reported—at least unofficially—to be slipping again because of recent reduction of vinyl chloride monomer prices (*CW Market Newsletter*, June 24).

And in the past weeks there have been price slashes on several other products, including polypropylene film, polyester resins and fluoroethylene resin products.

AviSun's big, 6-9¢/lb., price cuts on polypropylene film put polypropylene into considerably strengthened competitive position against polyethylene and other films, especially in bread overwrap and baked goods applications. New tabs are now a flat 64¢/lb. for all gauges in lots of 500 lbs. or more.

Especially significant in relation to breadwrap use is introduction of AviSun's new, 0.87-gauge polypropylene film, which yields 35,400 sq.in./lb. and, at 64¢/lb., figures to a film cost of 1.81¢/1,000 sq.in.

Lowest officially posted price for polyethylene film competing with the new film is 53½¢/lb., or 1.78¢/1,000 sq. in.

Other polypropylene producers indicate they will move in the same direction as AviSun. Visking (division of Union Carbide), for example, says it may go commercial with a polypropylene film before the end of the summer and expects to have one similar to, if not identical to, AviSun's 0.87-gauge material.

How will Du Pont's new high-yield cellophane film fare in the price battle? Three cellophane materials are designed for use in wrapping bread and other baked goods: "K" cellophane 250-201 (25,000 sq.in./lb.) costs 79¢/lb., or 3.16¢/1,000 sq.in.; "K" cellophane 195-203 (19,500 sq.in./lb.), at 79¢/lb., or 4.05¢/1,000 sq.in.; cellophane 220 MSD-60 (22,000 sq.in./lb.), at 62¢/lb., or 2.82¢/1,000 sq.in.

In view of polypropylene's price advantage over cellophane, an obvious question is: Why aren't polypropylene marketers talking more about comparative polyolefin and cellophane prices? Reason: right now the battle is concentrated between polypropylene and polyethylene, which require use of similar types of wrapping equipment.

The cost of converting existing wrapping equipment to handle polyolefin film would slow down switchover from cellophane to polypro-

Market Newsletter

(Continued)

pylene and polyethylene; but polyolefin film proponents say it's only a matter of time before cellophane will lose all breadwrap and bakery markets.

Latest plastic price shocker: Du Pont's reduction of polyester plastic resin and adhesive prices, ranging from 8% to a whopping 40%.

Prices of terephthalate copolyester resins, in solid form, were dropped 25-40%; for example a \$2.80/lb. brick form went down to \$1.70, a \$3.50 form to \$2.35, and a \$3.25 form to \$2.55/lb. Similar reductions apply to chopped forms.

Metallic yarn adhesive price cuts range from 11 to 14%. Adhesive No. 46980, for example, dropped from \$7.50 to \$6.45/gal., No. 46000-W-26912 went from \$9.15 to \$8.10/gal. Tabs of many other resin solutions were also reduced.

Also down: prices of Teflon tetrafluoroethylene resin products. Tri Point Industries (Albertson, Long Island, N.Y.) has brought prices of 100% virgin Teflon rods down 28%. Officially the reduction is attributed to improved manufacturing techniques and increased production; but the size of the price cut suggests that cost of Teflon powder may have been reduced by Du Pont.

Numerous price cuts are also cropping up in nonplastic areas:

- Ethyl Corp. knocked about 5% off tabs of lead antiknock compounds to better "utilize some of the excess capacity" and "to keep prices of lead antiknock compounds fully competitive."

- Other producers, including Enjay, Union Carbide, Shell, followed Hercules Powder (*CW Market Newsletter*, June 24) by reducing acetone prices to 7¢/lb. in tanks, 9½¢/lb. in drums (c.l.), and 11¢/lb. in drums (l.c.l.).

- Dow hacked 3¢/lb. off the price of triethylenetetramine, putting tank-car quantities at 46¢/lb., drums (c.l.) at 48¾¢, and l.c.l. quantities at 50¼¢/lb.

The hydrofluoric acid market is in a stew over price reductions that bring tags on bulk down as much as \$2/cwt. New quotes: 70% aqueous HF, \$230/ton (down from \$268); anhydrous HF, \$320/ton vs. \$360. Some producers, forced to go along, claim the reductions were unnecessary. Upcoming (in September) entry of Dixon Chemical's new, 11,000-tons/year plant at Paulsboro, N.J., say some, inspired the sharp drop in acid prices, but "only HF consumers are happy about it." It is known, of course, that the Dixon plant will be the first in the U.S. to use the new "economical" Swiss Ko-Kneader HF process (*CW*, March 12, '60, p. 43). On the basis of anticipated cost savings, the company has already signed long-term contracts to sell HF to a couple of big buyers at less than "published" prices.

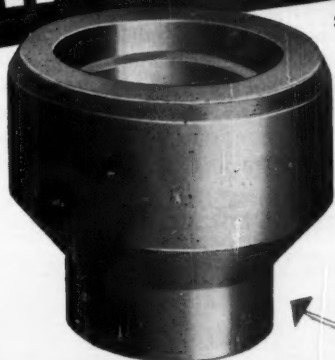
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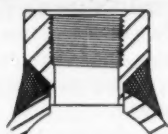
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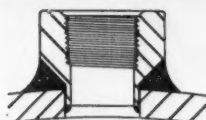
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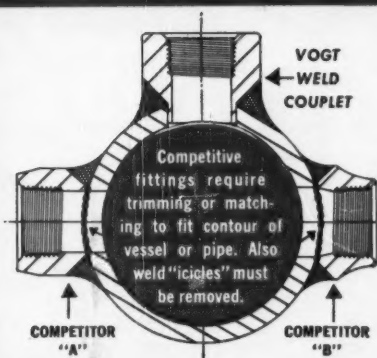
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Methanol Demand Grows

Last week Tenneco Chemical, subsidiary of Tennessee Gas Transmission Co., revealed plans to construct a methanol unit near Houston, Tex. This capacity, the industry's fourth new methanol plant planned for construction this year, augments two new methanol plants that came onstream earlier in '61. Upshot: although demand is climbing (chart, below), methanol could be heading into a serious oversupply situation.

In '60 supply and demand were in good balance: capacity was 329 million gal. and demand was about 300 million gal.

The increasing wave of current

expansions—assuming all proposed plants are built—will push total annual capacity over the 450-million-gal. mark by early '63. Demand, on the other hand, is expected to reach only 365 million gal. by the end of '65.

Here's the way the proposed expansions line up:

Tenneco Chemical's plant capacity was not revealed but is estimated at 25 million gal./year.

Borden Chemical revealed plans earlier this month to construct a 25-million-gal./year unit at Geismar, La. Commercial operation is scheduled for mid-'62.

Du Pont is planning two new projects. It has started construction of a 30-million-gal./year unit at Orange, Tex., to be completed in late '61. Still in the blueprint stage is another 30-million-gal./year unit at Huron, O., scheduled for completion by late '62 or early '63.

Meanwhile, two new methanol plants have already started up this year. Hercules placed its 8-million-gal./year unit onstream at Hercules, Calif., in Jan. '61. And Allied Chemical's 8-million-gal./year expansion at South Point, O., started operation in first-quarter '61.

In addition, several other firms are reportedly weighing plans to build new methanol plants. Among them: Heyden Newport, American Cyanamid, Rohm & Haas, Diamond Alkali.

Formaldehyde Is King: Although overcapacity threatens, demand for methanol will continue to rise, strengthened by the good fortunes of formaldehyde, the biggest end-user (over 40%). Formaldehyde's growth will come mainly from plastics—e.g., phenolics, melamines—and the new polyacetal resins—e.g., Du Pont's Delrin and Celanese's Celcon. Other formaldehyde derivatives (pentaerythritol, hexamethylenetetramine and trimethylolpropane) will also show good growth.

In '60 all formaldehyde products consumed 127 million gal. of methanol, an increase of about 45 million gal. over the '54 market. And there's plenty of growth potential left in formaldehyde derivatives. Result: by '65 they will likely take 172 million gal. of methanol.

Polyacetal resins could cause an even bigger boost. In '60 only about 2 million gal. of methanol went into the manufacture of Delrin, which chalked up sales of 11 million lbs. Trade observers see polyacetal resin demand by '65 at the 100-million-lbs. level—which would eat up 17 million gal. of methanol.

And this market could go even higher, depending on the outcome of Du Pont's infringement suit against Celanese. If Celanese wins the case, it's likely that several other producers will enter the scene to give a boost to the market. Celanese, meanwhile,

Methanol Demand Climbs



But Capacity Grows Faster

appears confident it is not infringing on Du Pont's patent, says it's going ahead with the construction of a large commercial Celcon plant at Bishop, Tex.

Chemicals Riding High: Other methanol derivatives are also riding a boom. In fact, nonformaldehyde methanol derivatives are expected to register a 40-million-gal. gain in demand during the next five years. Among the most important of these: methacrylates, methylamines, dimethyl terephthalate, methyl halides, ethylene glycol.

Methanol usage in methacrylates should rise to 20 million gal. by '65—a 7-million-gal. gain from '60's 13 million. Reason: the mounting market for methacrylate resins, which should be about 195 million lbs. by '65.

In methylamines, methanol use should climb 7 million gal. during the next five years, to about 16 million gal./year. It could be more, depending on the growth of unsymmetrical dimethyl hydrazine (UDMH), the rocket fuel. Right now, it appears that UDMH has a bright future. FMC Corp. last year received a \$20-million contract for a new UDMH plant. Shipments are to begin this year.

Dimethyl terephthalate (DMT) and methyl halides are also expanding their methanol requirements. By '65 an estimated 17 million gal. of unrecycled methanol will find its way into DMT manufacture, to register a 7-million-gal. advance over last year. (Although much of the methanol is recovered when DMT reacts with ethylene glycol in the manufacture of polyesters, the level of recovery is lower than is generally assumed.)

Methyl chloride for tetramethyl lead production is a bright part of the methyl halide picture. Several new methyl chloride plants are under construction and should be operational soon.

Not all of these units employ methanol as the starting material. Nevertheless, demand for methanol in this application will still advance at least 5 million gal. by '65, to about 13 million gal.

There are myriad other chemical derivatives made from methanol. These small individual consumers took

about 20 million gal. of methanol in '60, will likely take 32 million gal. by '65.

In addition, about 20 million gal. went into solvent applications. And another 20 million gal. were used in a host of miscellaneous products—e.g., antifreeze in gas transmission lines, heater fuels in railroad cars and trucks, consumer products for motorists. These applications will continue to play an important role in methanol's growth pattern.

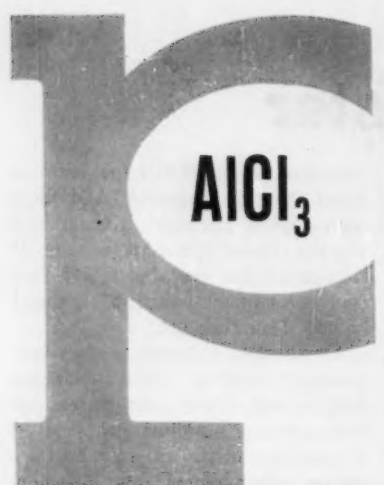
Looking at the Dark Side: Although methanol will register consistent gains in most of its major end-uses, two important markets will dwindle in the

next few years: aircraft fuel-injection fluids that use methanol (ADI fluids with 25-35% methanol in water) and exports. These two markets took 46 million gal. last year, but by '65 their total requirements will probably shrink to only 13 million gal.

Up to now, methanol used in anti-detonant injection (ADI) fluids has held up well. During '60 this end-use took about 17 million gal., but its days of importance to methanol producers are numbered. By '65 consumption will slip 11 million gal., to 6 million gal. Reason: the decline of the B-47 bomber. This plane, the major consumer of methanol ADI fluid, is

Matching Methanol Supply And Demand

PRODUCERS' CAPACITIES		PLANTS ON THE WAY	
	Million gallons/year		Million gallons/year
Allied Chemical South Point, O.	24	Borden Chemical Geismar, La.	25
Celanese Bishop, Tex.	18	Du Pont Orange, Tex. Huron, O.	30 30
Commercial Solvents Sterlington, La.	50	Tenneco Chemical Houston, Tex.	25
		Total	110
Du Pont Belle, W. Va. Orange, Tex.	20 100	DEMAND BY END-USE	
			Million gallons '60 '65
Escambia Chemical Pensacola, Fla.	20	Formaldehyde and inhibitor	125 155
Hercules Chemical Louisiana, Mo. Hercules, Calif.	8 8	Polyformaldehyde	2 17
		Methacrylates	13 20
		Methylamines	9 16
Heyden-Monsanto Texas City, Tex.	25	Dimethyl terephthlate	10 17
		Methyl halides	7 13
Rohm & Haas Houston, Tex.	12	Ethylene glycol	16 18
		Other chemical uses	20 32
Spencer Chemical Military, Kan.	9	Antifreeze	10 8
		Solvents	20 25
Union Carbide Chemicals South Charleston, W. Va. Texas City, Tex.	11 40	Aircraft fuel injection	17 6
		Exports	29 7
		Miscellaneous	20 30
Total	345	Totals	298 364

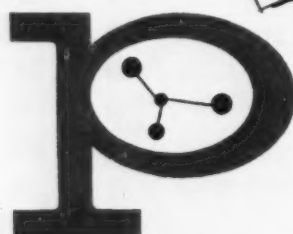


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MARKETS

now classified obsolete by the Air Force and is being phased out of operation to be replaced by B-58 (which does not use the ADI fluid).

Exports took 29.7 million gal. of methanol in '60, a gain of 12 million gal. over '59 and five times '57's total of 5.6 million gal. But by '65 exports will probably plummet to about 7 million gal./year. Reasons: (1) foreign plants are being built; (2) mounting tariffs.

Most of the methanol shipped overseas in '60 went to the Common Market countries, with West Germany taking the lion's share (10.7 million gal.). These countries are raising tariffs to non-Common Market countries. External tariffs on methanol are expected to reach about 33% c.i.f., while tariffs between member countries will disappear completely.

At the same time, methanol plant construction in Europe has been rapid. By the end of this year, capacity should satisfy all requirements.

Another methanol market is in for a decline. Methanol antifreeze will continue to slip, losing out to glycol-based products.

Outlook: Methanol demand over-all will continue to gain. Rising markets in important end-uses will offset losses in export, ADI fluid and antifreeze markets. But if all proposed plant construction is completed, a serious over-supply problem is likely to develop.

World Textile Survey

World man-made fiber production in '60 registered a 7.5% advance over '59, according to the just-released survey of Textile Economics Bureau (New York).

Output reached 7,551 million lbs. in '60, a gain of 525 million lbs. over '59's 7,026 million. The cellulose again accounted for the lion's share, with production reaching 5,748 million lbs.—a 184-million lbs. advance. Rayon output was up 3.5%, while the acetates increased only 1.5%.

The trend toward noncellulosics and glass fibers, which has been in progress for several years, continues strong. These fibers registered the largest gains and again carved a bigger piece of the world textile market. Textile glass fibers gained 26%, while other noncellulosics advanced an imposing 23% during the same period of time.

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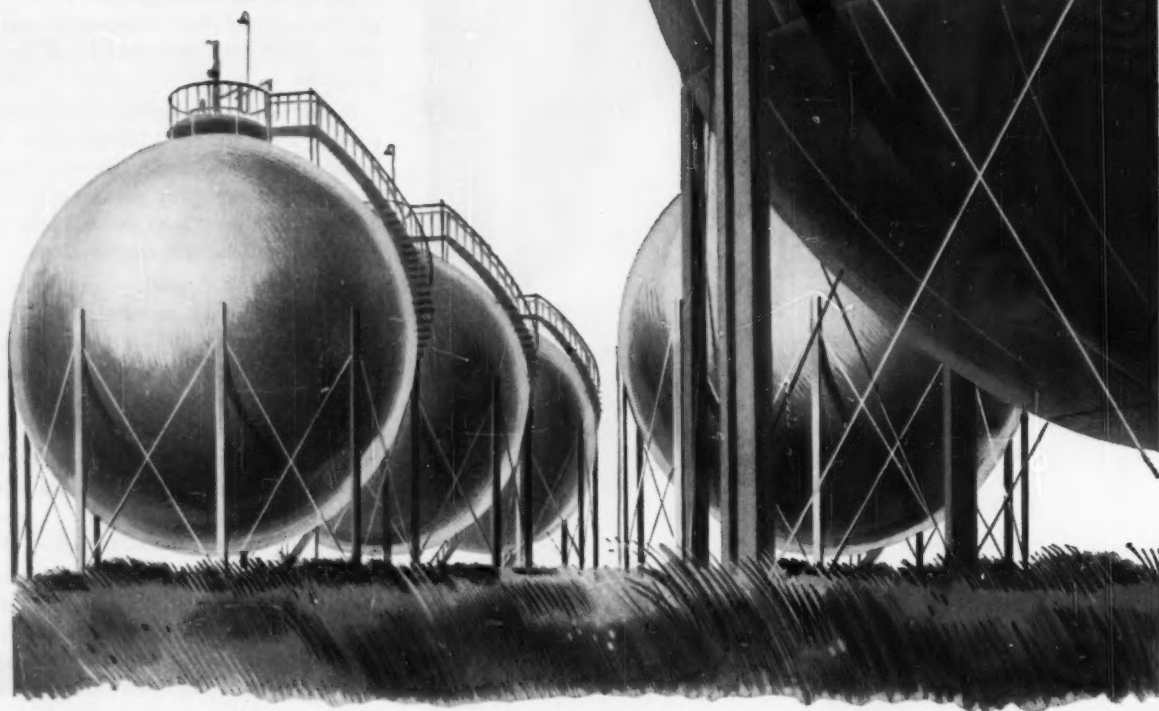
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Plough: Closer to Ethicals

Entry into \$25-million rubbing alcohol field gives Plough a wedge into hospital market.

This week a powerful contender joins the ranks of companies that sell approximately \$25 million/worth of rubbing alcohol in the U.S. Memphis-based Plough Inc., well known as maker of St. Joseph aspirin and Coppertone suntan items, is coming out with Alkolave Gel, a bluish, plastic-packaged jelly, containing 70% ethyl alcohol. Significance: it gives Plough a product with which to test the hospital and clinic market—which the company may soon hit with a line of ethical items.

Plough representatives think they've come up with a trend-setter in the concept of a gelled rubbing compound. They claim it will eliminate some of the unpleasant aspects of the ordinary alcohol rub—for example, the sudden shock of liquid alcohol's coldness and the resulting cold, clammy spots on the sheets and bed clothing.

Moreover, the patient receiving frequent alcohol massages often finds his skin dry and susceptible to cracking and irritation. (Similarly, nurses giving the rubdowns complain about their hands drying and cracking.)

Lotions and creams currently on the market have overcome some of these disadvantages and have gained considerable popularity. But, claims Landon Smith, Plough vice-president, these preparations don't retain all of alcohol's advantages: they have fewer of the cooling and refreshing properties of alcohol, lack its tonic effect on body areas; and most are oily emulsions, objectionable to some people.

The Plough product, a blue-green gel, is squeezed from a plastic bottle, "heaps" on the skin but spreads like a liquid when rubbed.

Initial marketing will be in the Chicago and Indianapolis areas. Sales efforts will be aimed at hospitals and clinics—the big users—and at individual consumers.

The product is substantially higher priced than liquid alcohol (a 12-oz. tube sells for \$1.19 and a 4-oz. tube

for 49¢), but Plough says it provides twice as many applications as the liquid product on an ounce-for-ounce basis.

Changing Image: Besides winning a share of the rubbing alcohol market, the new product will probably help reinforce the image Plough has been building up as a supplier of drug products. Earlier this year, Abe Plough, president of the company, talked enthusiastically of four or five new proprietary items ready for marketing; Alkolave Gel is the first to hit the trade.

He has also indicated that the company, either by acquisition of existing companies or by starting from scratch, would be in the ethical drug business by August or September of this year.

Plough apparently has developed several ethical preparations that it could market on its own, if it doesn't join with another company.

Introduction of the alcohol gel may be only a small step prior to the big leap into ethicals. But it could provide some useful lessons in the marketing of such items.

More Drugs by Mail

Another company eyeing the ethical drug field—at least on the sales level—is Spiegel Inc., a large Chicago mail-order house. The company has made public its intention to offer credit-account customers prescription drugs (including veterinarian items) by mail-order at a nonprofit price.

Morris Spiegel, president of Spiegel, tells **CHEMICAL WEEK** that the firm has hired five pharmacists to handle the orders. People who have a Spiegel charge or credit account, he says, will automatically receive membership in the Spiegel Prescription Drug Foundation, which will entitle them to buy drugs at cost. The customer will get a statement with the order, can pay for it immediately or use the charge privilege. Spiegel won't estimate how much drug business it

expects to write for its 4 million credit-account customers.

Addition of the company to the mail-order prescription ranks marks a sharp loss for the American Pharmaceutical Assn., which has come out vigorously in opposition to the idea of drug-selling by mail (*CW*, June 4, '60, p. 61).

It is, of course, too early to assess reaction of drugstore proprietors and pharmaceutical makers. One drug-maker, however, tells *CW* that the move is sure to "cause trouble." He also feels that a clear definition of "nonprofit" from Spiegel would be helpful, suggests that "fair traded" drugs might present a problem to the mail-order house.

PRODUCTS

Protective Coating: United States Stoneware Co.'s (Akron) self-curing sacrificial metal coating called Tyzin reportedly resists (with or without a topcoat) organic and inorganic solvents, fresh or salt water, oils and greases. Tyzin metal zinc powder is a modified lacquer base; the solution is over 57% total solids by weight.

Cleaner-Stripper: Patclin Chemical Co., Inc. (Yonkers, N.Y.), has developed Patclin 601, a nonclogging heavy-duty steam-cleaning and stripping compound. A liquid, it contains alkaline salts, chelating agents, surfactants and solvents, is used in high dilution.

Cement Additive: Dow Chemical Co. is marketing a latex additive, Styrocrete, for portland cement mortar. Suggested use: for bonding Styrofoam insulation board to masonry, cured concrete, metal and other surfaces. Synthetic latex particles in Styrocrete are said to increase mortar adhesion and reduce water transmission.

Phenolic Resin: General Electric has licensed Koppers Co., Inc., to manufacture and sell its Flexiphen 1960 phenols, which are used in internally plasticized, permanently flexible phenolic resins. Besides providing flexibility, the modified resins are "preheatable," which is said to reduce premature gelation or burning.



Lagger easily snaps prefab aluminum-jacketed insulation in place.

Needed: Better Heat Barriers

By the end of this year a novel film for the jackets on insulated pipelines will be coming from a new Du Pont film plant. Du Pont's decision to go commercial with Tedlar polyvinyl fluoride film, after 15 years of testing, reflects the chemical process industries' growing—now \$50-million/year—requirements for better pipeline jacketing and insulation.

New jacketing, of course, is just a part of the pipe insulation story, which includes the heat barrier itself and installation of both insulator and wrap. In fact, CPI management is even more concerned about the installation (labor) costs, which are one and a half to three times the cost of materials, and this puts consideration of a new material's installability (see picture, above) ahead of consideration of its properties. That's why new materials—and there has been a raft of new insulators and wraps—are offered in preformed or prefabricated (insulation plus cover) sections, and why

durability (low replacement or upkeep) is a key selling point for these products.

There's no question that chemical processors see the need to keep heat and cold losses at a minimum. For example, Union Carbide Chemicals Co. recently estimated that the proper thickness of insulation can cut a plant's fuel bill up to \$2/foot of line/year. Carbide also figures, however, that 85% of the CPI's lines are underinsulated—by as much as 50% in some cases.

Weatherproofing the Line: Many of the latest improvements in insulating pipelines concern the coverings—insulation keeps the heat or cold in; the covering keeps the weather out. Older covering materials, such as tar paper or painted canvas, have to be replaced in five to 10 years, require frequent maintenance—hence raise labor costs. Moreover, they don't hold up in corrosive atmospheres and are not fire resistant—two important con-

siderations in plants using newer processes.

But despite these drawbacks, the older coatings have a substantially lower purchase cost than newer materials. Tar paper, for example, costs about 6¢/sq.ft.; newer stainless steel, currently bidding for CPI jobs, costs about 40¢/sq.ft. It's easy to see why management turns down newer materials. Producers of materials such as stainless must prove that the long-run (20 year) cost will be less than that of tar paper.

Like stainless, Du Pont's Tedlar will have to be sold on its durability merits. Tedlar requires little maintenance, but cost of applying a 2-mil-thick coat will be about 7-8¢/sq.ft. And, if additional backup material is required, the cost could be doubled. Du Pont says Tedlar, now out of the pilot-plant stage (*CW Technology Newsletter*, June 24), is resistant to fire and weather, holds up well against acids and caustics alike, and should last over 15 years in normal plant conditions.*

At least two insulation companies are capitalizing on the debut of the new film. American Sisalkraft has recently introduced an insulation covering called PyroKure, which consists of a glass-reinforced aluminum foil, with a 2-mil outer coat of Tedlar. This is priced at about 15¢/sq.ft. And this fall Insul-Coustic will be out with an aluminum covering that has a thin Tedlar coat for added corrosion resistance.

Shining Prospect: Aluminum is corrosion resistant in its own right, except in caustic atmospheres. Right now, plant men are eyeing aluminum with growing interest, although the purchase cost of aluminum coverings with a kraft paper moisture barrier ranges from about 8¢/sq.ft. for a 0.006-in.-thick sheet to 20¢/sq.ft. for a 0.024-in. sheet. Some marketers predict that the present sales rate—an estimated \$3 million/year—will double in three years.

Some stainless-steel jacketing producers are even more optimistic in their predictions. Although less than 50,000 sq.ft. (\$15-20,000 worth) of stainless jacket is used in chemical plants today, these producers figure

*The tough film will, of course, have many uses outside the CPI—e.g., it may be bonded to aluminum siding, wood, etc.

their sales will rise to \$5 million/-year by '65, despite the high first cost of stainless.

In some plants, the requirement for an extremely fire-resistant covering puts stainless strongly in the running. Some companies are now insisting on a jacketed insulation on units turning out a heat-sensitive or explosive chemical (e.g., ethylene oxide). Specifications call for a coating that can withstand direct fire for over an hour. Although several insulation materials pass this test (e.g., calcium silicate or 85% magnesia), only stainless or fire-resistant mastics such as polyvinyl acetate sheathing can hold up.

PVAc mastics have excellent weather resistance but usually must be applied by hand, running up the installed cost to about 20% higher than for application of 0.006-in. aluminum sheet. Spread on like a mud, about 1/8 in. thick, the mastics harden to a tough, tile-like finish, require little maintenance.

Insulator's Chore: Purchase cost is not as critical a factor in insulation as it is in coverings. Most insulation costs about the same, 30-40¢/sq.ft. for 1-in.-thick material. The object is to get easier-to-handle materials that have lower thermal conductivity.

Well-established insulations such as 85% magnesia (see chart, right), earths, cork, hair and wool felts are losing popularity. Reasons vary. For instance, 85% magnesia has an upper temperature limit of 600 F, not high enough for some of the new processes. Diatomaceous earths, on the other hand, which have a high temperature limit (1900 F), are losing ground to better heat barriers, such as calcium silicate. In a similar way, the felts are giving way to their less-heat-conducting counterparts, plastics such as polyurethane and polystyrene.

Because they are seldom higher in price than conventional materials, the newer insulations are welcomed in chemical plants—if only for tests—as soon as they are commercially available.

One such insulation, which has completed its initiation in the CPI and is now being offered for varied chemical insulating jobs, is Johns-Manville's Min-K. Well publicized for its job in insulating the Mercury space capsule,

it conducts heat at a slower rate than any other commercial insulation (typical Min-K thermal conductivity: 0.14 Btu. in./hour/sq.ft./F at 400 F—less than that of still air).

Freeport Sulphur is using Min-K as the outer insulation in a double-walled pipe carrying molten sulfur from the firm's mine seven miles out in the Gulf of Mexico (*CW*, Nov. 28, '59, p. 102). This application points up Min-K's usefulness in situations where space is limited—a blanket 1 in. thick does the job of a 3-in. blanket of conventional insulation.

Min-K has an extremely dense structure, basically a high-temperature (2200 F) insulation of bonded silica with fine pores less than 4 millionths of an inch in diameter.

The big drawback of Min-K is its high cost, two to three times the purchase cost of conventional insulating materials.

Hot or Cold: Another high-temperature insulating material in which chemical processors are showing a great interest is Du Pont's fibrous potassium titanate, called Tipersul (*CW*, Feb. 27, '60, p. 104). It's a stiff insulation, good for temperatures up to 2200 F and has a very low conductivity (0.17 Btu. in./sq.ft./hour/F at 400 F). Du Pont has not yet decided whether it will produce Tipersul commercially.

In contrast with Tipersul, calcium silicate is firmly established as an insulation. It is the most popular insulation material used in chemical plants with total sales of over \$15 million/-year. It is a stiff, high-temperature insulation, can be cut easily to fit joints or fittings and resists chemical attack; and indications are that it will last indefinitely if properly protected.

Plastics are probably the fastest-growing type of insulation. Process men like them because they are easy to handle, particularly those that can be foamed in place. Installation time for such materials is half that of hair and felt materials. But plant men have become wary of certain types that tend to lose their thermal resistance as trapped gases escape.

Shape of Things to Come: Plant engineers are pushing hard for prefabricated insulation and coverings, even in special shapes. The prime objective here: cut installation costs. Jackets 36 in. long, with insulation preattached (and with varying thicknesses offered), are increasingly popular. Insulation and covering can be snapped in place over a pipe and clamped at the ends with special water-tight bands. Prefabs of this type are now being offered by Johns-Manville, Owens-Corning and several smaller firms (e.g., Insul-Coustic).

These companies also make pre-

Pipe Insulation: What's Available to CPI

Type	Temperature Limit (F) & Thermal Conductivity BTU in./sq.ft./hr/F	Status
Calcium silicate	1200 F; 0.46 at 400 F	Use growing, most popular insulation material in CPI.
Plastics—e.g., polyurethane	200 F; 0.24 at 32 F	Use growing fast, particularly in cold-line insulation.
Glass fibers	450 F; 0.35 at 300 F	Use growing but limited to medium-low temperatures.
Bonded perlite	1500 F; 0.45 at 400 F	Use growing, aided by quality improvements.
Mineral wools	1000 F; 0.40-0.45 at 400 F	Use growing, particularly where flexibility is desired.
Diatomaceous earths	1900 F; 0.69 at 400 F	Use declining, losing ground to glass fibers and silicate.
Magnesia (85%)	600 F; 0.46 at 400 F	Use definitely declining, virtually displaced by glass fibers, calcium silicate, etc.
Cork, hair, wool, Cotton felt	200-350 F; 0.35-0.50 at 200 F	Use declining, losing ground to plastics.

Chemical Week

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PRODUCTION

fabricated joints and fittings; but in these items, as well as other prefabricated parts, there are problems. For example, expansion and contraction of the jacket material differs from those of the pipe, and a poor fit sometimes results. A possible answer to this problem: more flexible coverings.

Chemical processors are also seeking larger parts and more special shapes. For instance, they want heat-exchanger insulation sections in larger sizes. Right now, an exchanger must be insulated with hundreds of small, individually cemented blocks, held in place by wire.

Another special shape, now available from J-M and O-C, is "extended leg" insulation. This type permits the use of tracing or electrical heating wire along the pipe without requiring oversize insulation.

Most rigid pipe insulation today is molded in perfect half-circles. "Extended leg" insulation is formed with a $\frac{3}{8}$ -in. tangent on each end of the half-circle. This allows the insulation to exactly fit the top half of the pipe, at the same time providing a $\frac{3}{4}$ -in. space at the bottom for the tracer. This "out-of-round" insulation is priced the same as the standard half-circle covering, but eliminates the extra cost of oversize insulation to cover the tracer.

Heat Reflector: One unusual insulation, which doesn't require fibrous or solid materials, is the reflective type. It's now gaining headway in chemical plants in special applications (mostly atomic reactors), is being offered by Mirror Insulation Co., Inc., and Johns-Manville, among others.

The insulation is all-metal—e.g., aluminum or stainless steel—and consists of an outer case for weather resistance and many closely spaced, reflective inner sheets (plus supports that connect the sheets and case to form isolated air chambers).

Its main features, besides weather resistance: extreme cleanliness and long life, probably indefinite under normal plant conditions. Its big drawback: high cost—three or four times higher than equivalent conventional covered insulation.

With improved insulation and coverings such as these, plus an encouraging attitude toward any other new products, the chemical process industries are well on their way to cracking the heat-loss barrier.

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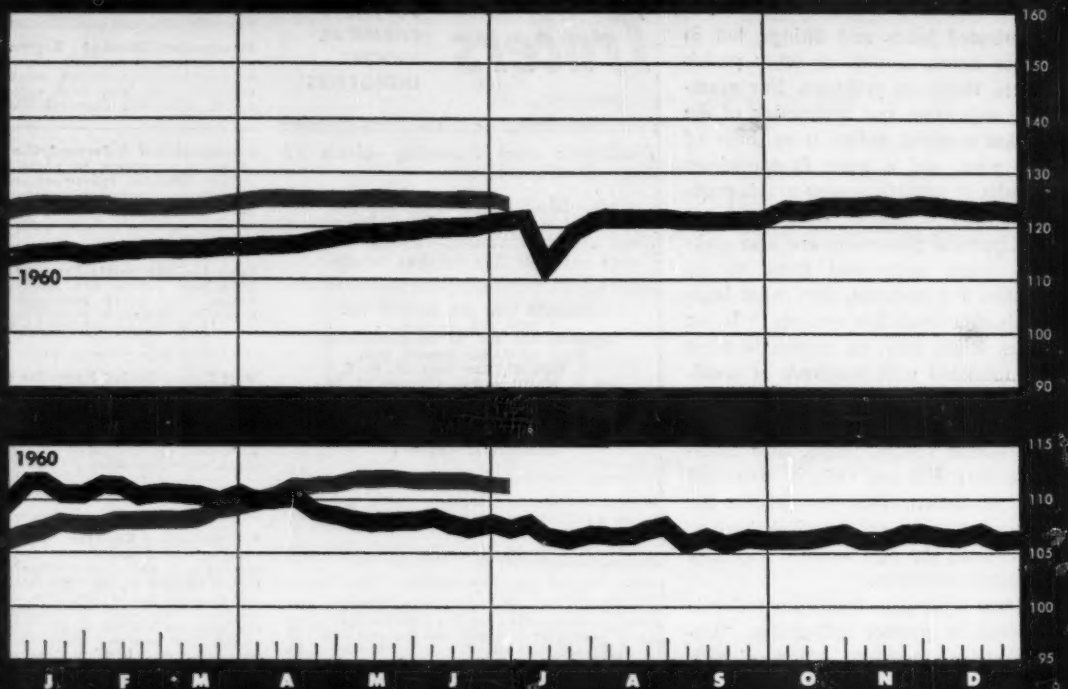
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JULY 1, 1961

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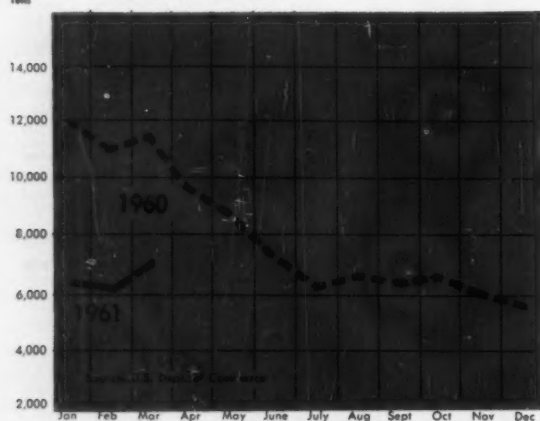
	Latest Week	Preceding Week	Year Ago
Chemical Week output (1957=100)	123.1	125.6	123.0
Chemical Week wholesale price index (1947=100)	110.3	111.0	109.0
Stock price index (12 firms, Standard & Poor's)	53.22	54.37	51.68
Steel ingot output (thousand tons)	1,985	2,042	1,775
Electric power (million kilowatt-hours)	15,345	15,004	14,441
Crude oil and condensate (daily av., thousand bbls.)	7,105	7,053	6,839

PRODUCTION INDICATORS (1957=100, unadjusted)

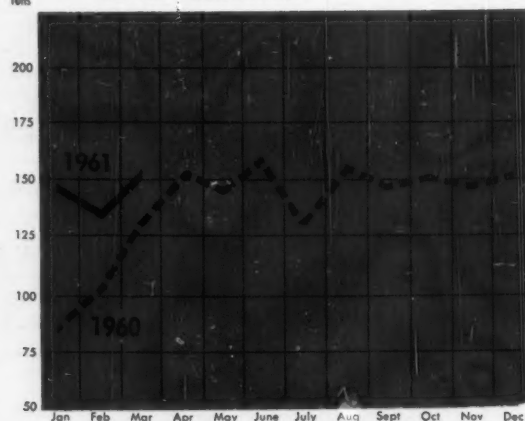
	Latest Month	Preceding Month	Year Ago
All manufacturing	108	106	110
Nondurable goods manufacturing	115	114	115
Durable goods manufacturing	103	100	107
Chemicals and allied products	127	123	125
Industrial chemicals	131	128	129
Petroleum and coal products	109	104	105

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It's NEW . . . it's UNIQUE! It's higher in strength, lighter in weight, easier to handle—and provides the best protection that reagent acids ever had. This distinctive shipping case of shock-absorbing expanded polystyrene is a development of Baker & Adamson packaging research. It provides superlative protection in shipping and storage, and is available *only* with B&A "C.P." Acids and Ammonia.

Enthusiastic reports from B&A "C.P." Acid users, large and small, point up such features as protection in transit . . . compact size . . . easier stockroom handling . . . simplified distribution to scattered locations.

When empty, these non-returnable polystyrene cases also offer interesting possibilities for use at home, in the laboratory, in many places. You'll be intrigued by the things you can do with them.

Specify B&A "C.P." Acids on your next order and get the all-new, foam containers as a bonus!

Safer! This new case cradles bottles in a form-fitting polystyrene foam cushion that smothers shocks, prevents breakage. Meets the most stringent ICC requirements. Case is chemical and weather-resistant, too—ideal for outdoor storage.

Lighter! The polystyrene case is much lighter than old-style cases; weighs less than 11 lbs. with empty bottles. Easier to lift and move. Costs less to ship.

Easier to Handle! Convenient finger grips, light weight, and cube shape make the case easy to handle. Tops and bottoms interlock for safe stacking.

Order these B&A Reagents in the Case for Quality—

Hydrochloric Acid, "C.P.", Reagent, ACS
Nitric Acid, "C.P.", Reagent, ACS
Sulfuric Acid, "C.P.", Reagent, ACS
Ammonium Hydroxide, "C.P.", Reagent, ACS
Acetic Acid, Glacial, 99.7%, Reagent, ACS

Also:

Nitric Acid, 40° Be., Technical
Acetic Acid, Glacial, U.S.P.
Perchloric Acid, 70%, Reagent, ACS
Perchloric Acid, 60%, Reagent, ACS



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Regardless of temperature or concentration **DURCO** can provide the material to eliminate your corrosion problem.

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